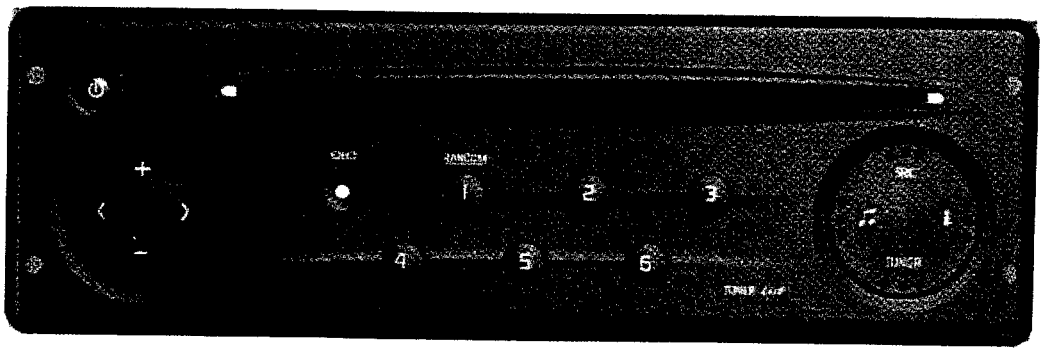
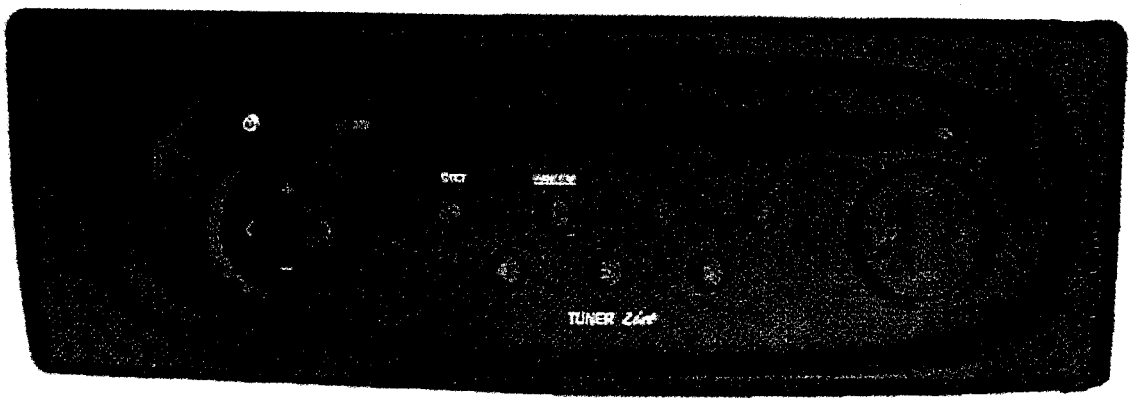
automotiv
mannesmann
VDO

Service Manua





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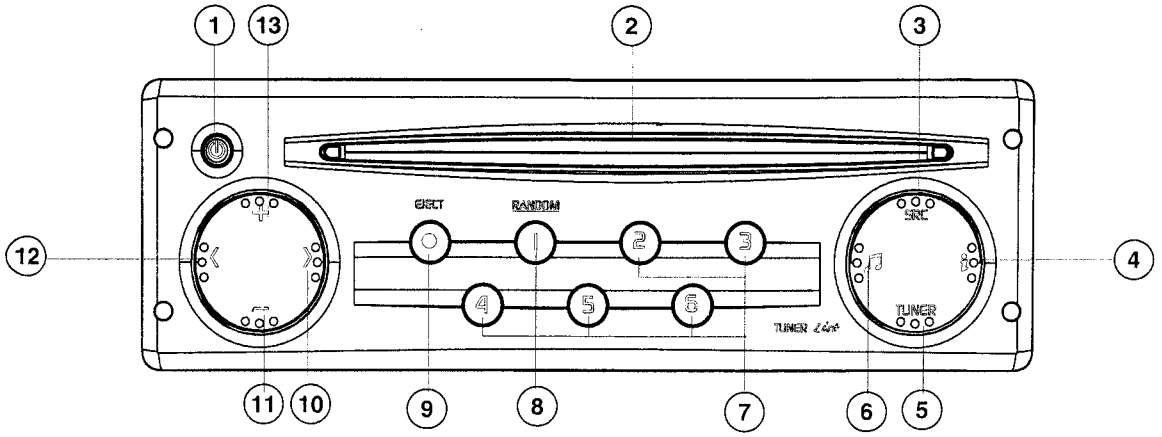
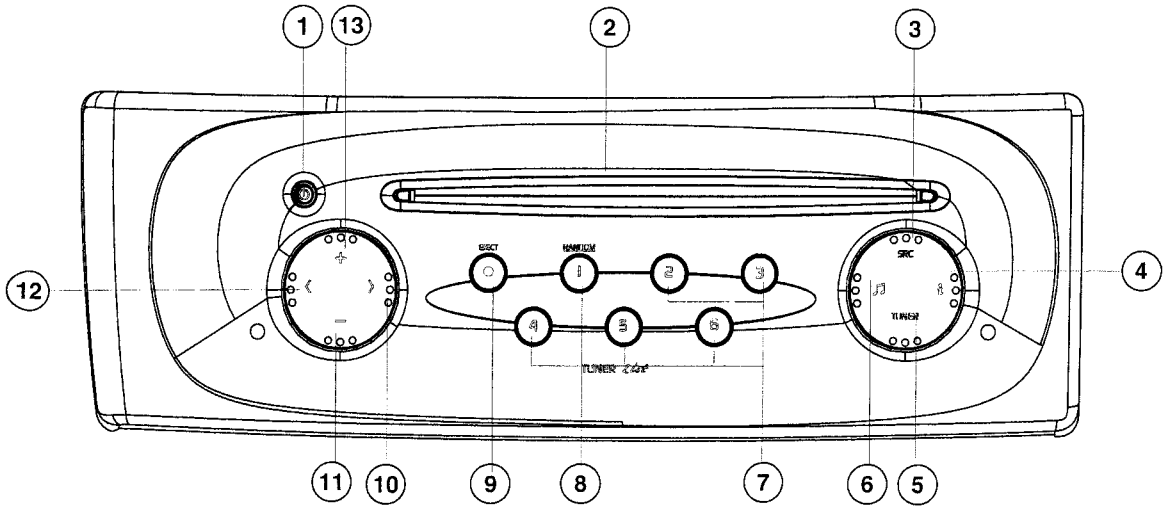
CONTROLS

Front



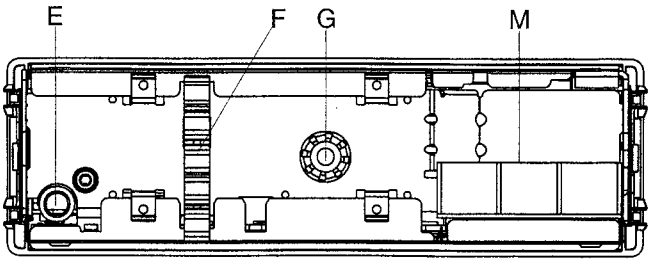
22DC279/62
22DC279/62F
22DC279/62Z

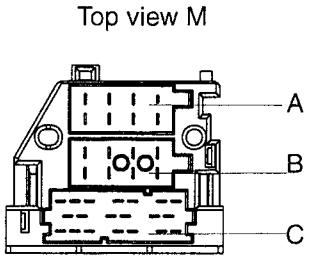


22DC279/62P
22DC279/62R
22DC279/62T

1	ON / OFF
2	DISK OPENING
3	SOURCE
4	INFO
5	TUNER
6	BASS/TREBLE - BAL/FADER
7	PRESET 2,3,4,5,6
8	PRESET 1 / RANDOM
9	EJECT DISK BUTTON
10	SEARCH UP
11	VOL -
12	SEARCH DOWN
13	VOL +

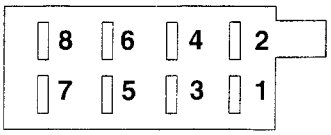
CONNECTIONS





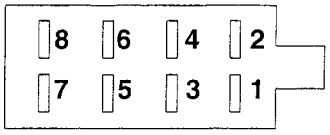
A1	Speed
A2	N.C
A3	Tel mute
A4	Power permanent supply
A5	Remote antenna +
A6	External illumination +
A7	Non power ignition supply
A8	Power ground

A : POWER SUPPLY



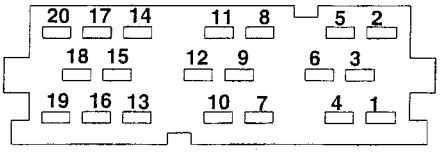
B1	Rear right +
B2	Rear right -
B3	Front right +
B4	Front right -
B5	Front left +
B6	Front left -
B7	Rear left +
B8	Rear left -

B : LOUDSPEAKER SUPPLY



C1-1	Ext SDA	Yellow Connector
C1-2	Ext SCL	
C1-3	Ext MRQ	
C1-4	NC	
C1-5	Radio on	
C1-6	Ground	
C2-7	NC	Green Connector
C2-8	NC	
C2-9	NC	
C2-10	NC	
C2-11	NC	
C2-12	NC	
C3-13	CD UART TXD	Blue Connector
C3-14	CD UART RXD	
C3-15	CD UART Gnd	
C3-16	+ 12v PERMANENT	
C3-17	Remote antenna +	
C3-18	SPDIF input line	
C3-19	SPDIF Gnd	
C3-20	SPDIF Gnd	

C : Line - out GND



C3 : Digital CD changer (UART + SPDIF)

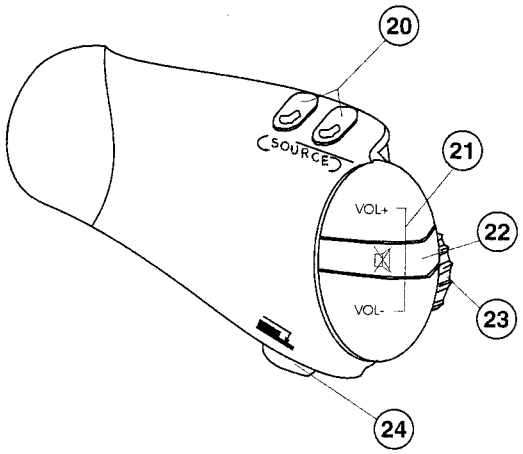
E	Aerial plug
F	Fastening cable

E : AERIAL PLUG SLIDE IN

G : Buffer mounting

22DC279/62. --

REMOTE CONTROL



20	Change waveband/source	
21	Vol , Bass, Treble, Balance, Fader + and - when corresponding function activated	
22	In code entry mode: SP : Validation digit Sec Code LP : Validation Sec Code	All others modes: Mute / Demute
23	In code entry mode: Selection digits Sec Code	Changing preset / Track selection
24	In code entry mode: SP : Validation digit Sec Code LP : Validation Sec Code	In radio mode: SP : search UP LP : Starts Autostore

SP : Short press LP : Long press (>2s)

TECHNICAL DATA

GENERAL

Power supply	:from 10.5 to 16V DC
Dimensions	:180x150x51 mm

FEATURES

FM-LW-MW-SW-RDS (EON).

Carequalization function	: yes
Dolby Noise Reduction	: yes
Music Search System	: yes
Remote control	: yes
Remote display	: yes
Security code	: yes
Speed dependant volume	: yes
Telephone mute	: yes

RADIO

LW	: 144-288 KHz
MW	: 531-1629 KHz
FM	: 87.5-108 MHz
Sensivity 26dB S/N	: <40 µV (LW)
	: <30 µV (MW)
	: 1,8 µV (FM)
Limitation α-3dB	: 4,5 µV +/- 3µV

CD

CD mechanism	: CDM-M3/4.4

AMPLIFIER

Output power	: 4x15 W / 4 Ω (THD = 10%)
Fader control	: ≥40 dB
Balance control	: ≥40 dB
Source separation	: ≥60 dB
Input sensivity (CD in)	: 150 mV ± 2 dB

RADIO - EXTRACT OF THE DFU

You are the owner of a Renault World Radio Receiver, a sophisticated multi-band radio enabling you access many frequencies and wave bands from all over the world.
Your radio is factory set for the country of purchase, however if you travel abroad with your vehicle to another continent it is advisable to reste your radio to that continents radio frequency range.
Caution : Before commencing with this sequences it is important to ensure that you have the preset code for your radio.

To select a continent

1. Turn off the set .

2. Press keys 2 and 5 simultaneously, whilst pressing these keys swith on the set.

3. Wait for 2 minutes until prompted to enter the set code.

4. Enter the set code

5. Use the thumbwheel on the satellite to access the desired continent.
   Others
   America
   Japan
   Asia
   Arabia

6. When you have selected the desired continent long press ▬
Then continue the sequence to select curves (auto equalisation).
The curve sequence is dependent on the type of car, refer to your car manual or dealer for the correct curve number.
Using the thumbwheel select the desired curve.

Curve	0	=OFF
	1	=Emply
	2	=Clio or similar
	3	=Megane or similar
	4	=Laguna or similar
	5	=Safrane or similar

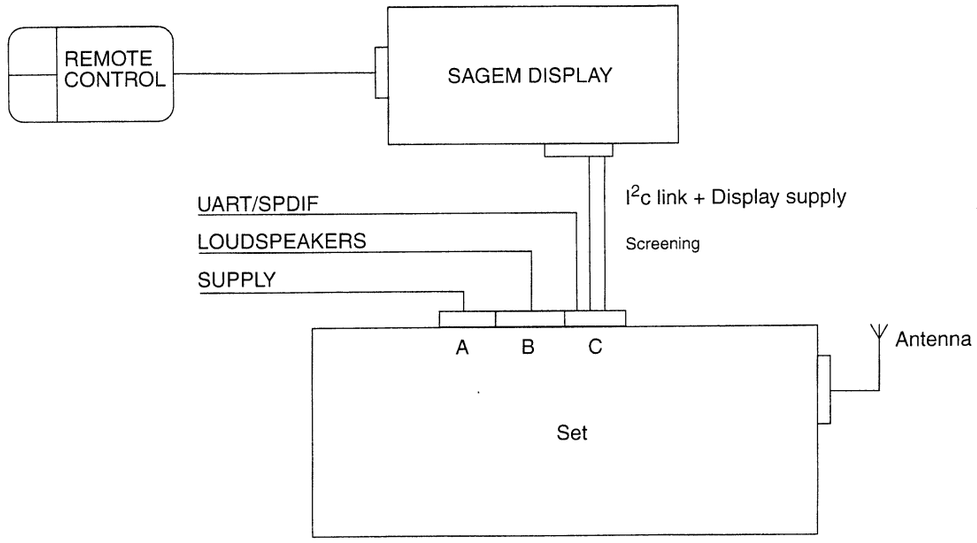
Except if the vehicule manual recommends an other selection.
Long press ▬ to leave the mode.
7. Select REAR ON/OFF (loadspeakers).
Press ▬ to validate, after this procedure the set will play normally.

22DC279/62X

SPECIAL FONCTIONS

These sets are parts of a system, composed of the following parts:
1)- The set 22DC279/62 or /62F /62P /62R /62T /62Z.
2)- A remote control + cable.
3)- A remote SAGEM display (A1+ display)
4)- A cable link between the set (connector D) and the display.

-IN CASE YOU NEED PARTS OF THIS SYSTEM, PLEASE CONTACT LOCALLY RENAULT TO GET INFO ABOUT THESE PARTS.



This set is protected by a security code. **THE CODE CAN ONLY BE ENTERED VIA THE REMOTE CONTROL.**

Entering the code:
-) Press the On/Off key to switch on the set. 0000 will appear on the display.
-) To select the four digits of the code:
- Adjust the flashing digit with the thumbwheel on the remote control.
- Press the [22] key or 24] key on the remote control to change the digit.

-) Press the [22] key or [24] key for at least 2 seconds to validate the code.
When the code is activated a bleep will be heard.

Example : you want to enter the code 7637

	Turn the thumbwheel Press [22] or [24]	Turn the thumbwheel Press [22] or [24]	Turn the thumbwheel Press [22] or [24]	Turn the thumbwheel Press [22] or [24]	Press [22] or [24] for at least 2 seconds
0000	7000	7600	7630	7637	Last heard frequency

This test can be aborted at any time by switching the set OFF.

2 - Keyboard test

Starting the test: press Pr3 and ON.

"T" is displayed to request keyboard test. For each key pressed, the number of the pressed key appears, according to the table shown below. When all 15 keys have been pressed, "TEST OK" message is displayed.

number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
key	+	>	-	<	MSS RANDOM	Pr 1	Pr 2	Pr 3	Pr 4	Pr 5	Pr 6	SRC		TUNER	

ESD

WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD equipment available:

Anti-static table mat large 1200X650X1.25mm	4822 466 10953
small 600X650X1.25mm	4822 466 10958
Connection box (1Mohm)	4822 395 10223
Extendible cable (to connect wrist band to connection box)	4822 320 11307
Connecting cable (to connect table mat to connection box)	4822 320 11305
Earth cable (to connect any product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 310 10671
wristband tester	4822 344 13999

CHECKS AND ALIGNEMENTS

For general test instruction, please refer to the manual "

Current and voltage

1) Supply voltages - SET OFF-

SET OFF	Voltage	Total current +Acc ON	Total current +Acc OFF	µP supply pin 30	µP V-LOW pin 64
Acc supply	+12.6V	< 3mA	not relevant	Min 4,8V Max 5,2V	Max 0,8V
Perm Supply	+12.6V	< 2mA	<2 mA		

2) Supply voltage - SET ON-

Reset µP pin 25	5V supply TDH3608TH pin 15		V-LOW µP pin 64		8,5V TDA3608TH pin 4		5V TDA3608TH pin 5		EEPROM supply pin 8	
Max 0,8V	min 4,8V	max 5,2V	min 0,8V	max 5.2V	min 8V	max 9V	min 4,8V	max 5,2V	min 4,8V	max 5,2V

CDSP Digital supply		CDSP analog supply	
min 3.1V	max 3.5V	min 3,1V	max 3,5V

Consumption	FM	CD	FM + 4 x 5 W	FM + 4 x 15 W	FM + 4 x 17 W
DC 259/62	500 mA	700 mA	5.0 A	8.0 A	
DC 259/62L	700 mA	900 mA	5.0 A		10.0 A
Limits	+/- 200 mA	+/- 200 mA	+/- 500 mA	+/- 1 A	+/- 1 A

3) Reference oscillator frequencies

Devices	TMP93PW44DF pin 22 & 23	SAA1305T pin 14 &15	SAA7708
Frequency	14,74 MHz	32,768 Khz	11,289 Mhz
Cristal Accuracy	+/- 30 PPM	+/- 15 %	+/- 60 PPM

Checks:

1) FM

FM mute	98 MHz 1mV	output at load resistor R & L = 775 mV = REF
	no signal	output should be < -24 dB (REF - 24 dB)

Limiting point α-3dB	RANGE	INPUT	NOMINAL	MIN	MAX
	98 Mhz	1Khz	5 µV	3 µV	8 µV

Search levels Input 98 MHz	Min : 10 µV	Nom : 18 µV	Max : 25 µV

2) AM

Sensivity at 26dB	162 khz	m = 30 %	1 khz	< 38 µV
S+N / N	1053 khz			< 30 µV

No alignment is needed for radio part. The tuner module is pre-aligned in the factory.
Dolby alignment, crosstalk alignment and FM DC level curve learning procedure are performed via a special equipment and software, not yet available in Service.
Some values are stored in the EEprom.
The EEprom available in service will contain mean values, that could affect slightly the performance of the set. It is the only solution until further notice.
Consequence: If you change the tuner module, change also the EEprom.

3) CD part

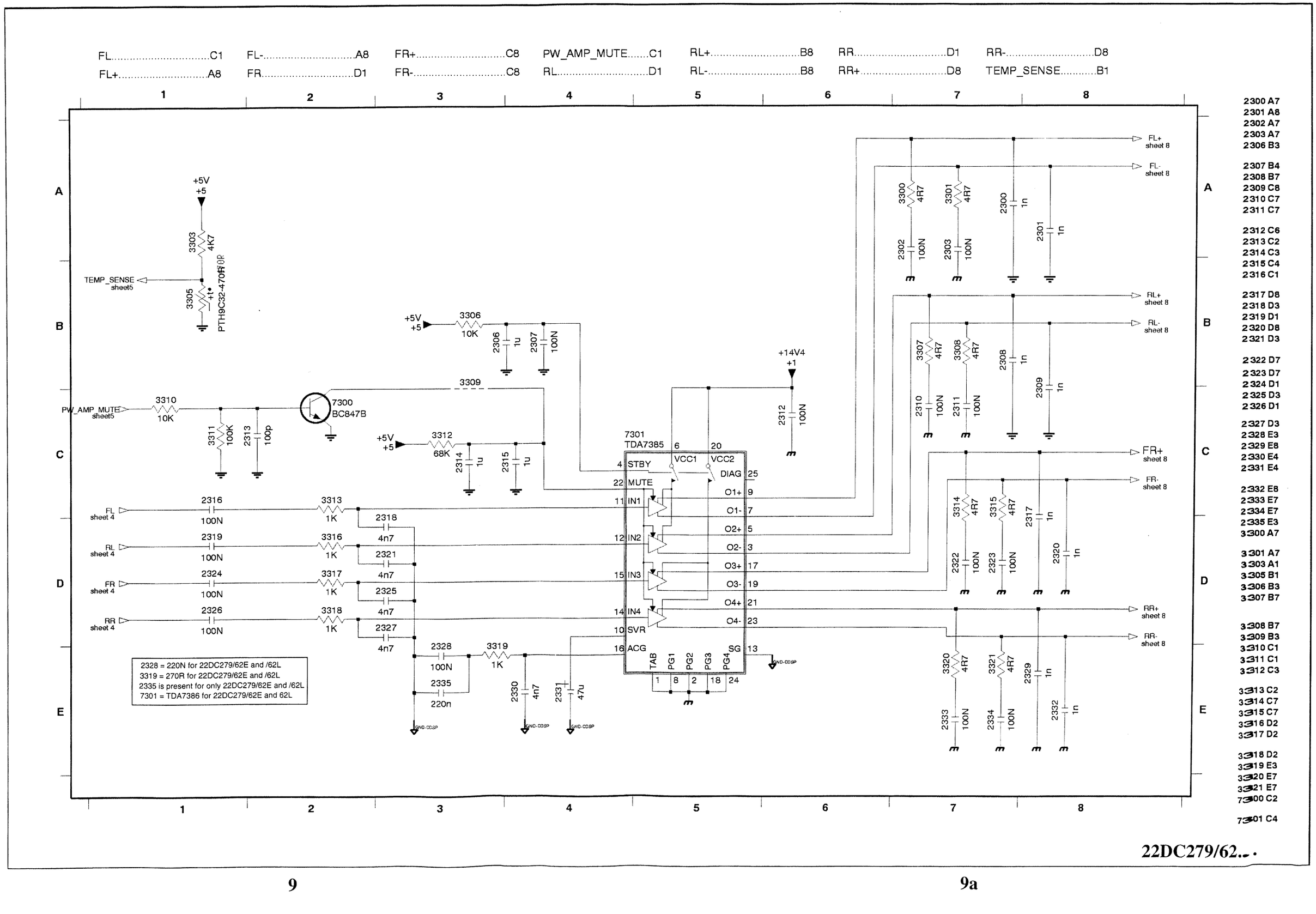
Test CD	Test	Result
Eccent-music 150um 4822 397 30279	Insert disk and play track 01	No failure
Vertical deviation 4822 397 30282	Check loading, display of number of tracks and total time. Select track no 9 time 00.20 listen to the disk during 4 seconds	No electrical or mechanical noise
Sub chassis VII A 7104 099 28350	Check loading, display of number of track and total time listen to track 01 diring 5 seconds. Track 02 check left and right channel. Track 8 time 00.20 listen to disk during 10 seconds.	Good sound quality and no noise. No failure. Good quality, no jump and no noise.
Commercial 8 cm CD	Check playability.	No failure.

Test CD	Test : CROSS-TALK		Result
Audio signal disk 1 4822 397 30184	Compression Off	Crosstalk track 67 and 71	Crosstalk < -65dB
	Compression On		Crosstalk < -60dB (comp 1 by default)
Test CD	Test: TOTAL HARMONIC DISTORTION		Result
20Khz filter 7104 087 04981	Compression Off	track 67 and 71	Distortion < 0.3 %
	Compression On		Distortion < 10%

Signal to noise ratio

A weighted filter, track 1 versus track 49 of disk 1	
Compression Off	S / N > 80dB
Compression On (default 1)	S / N > 70dB

POWER AMPLIFIER PART



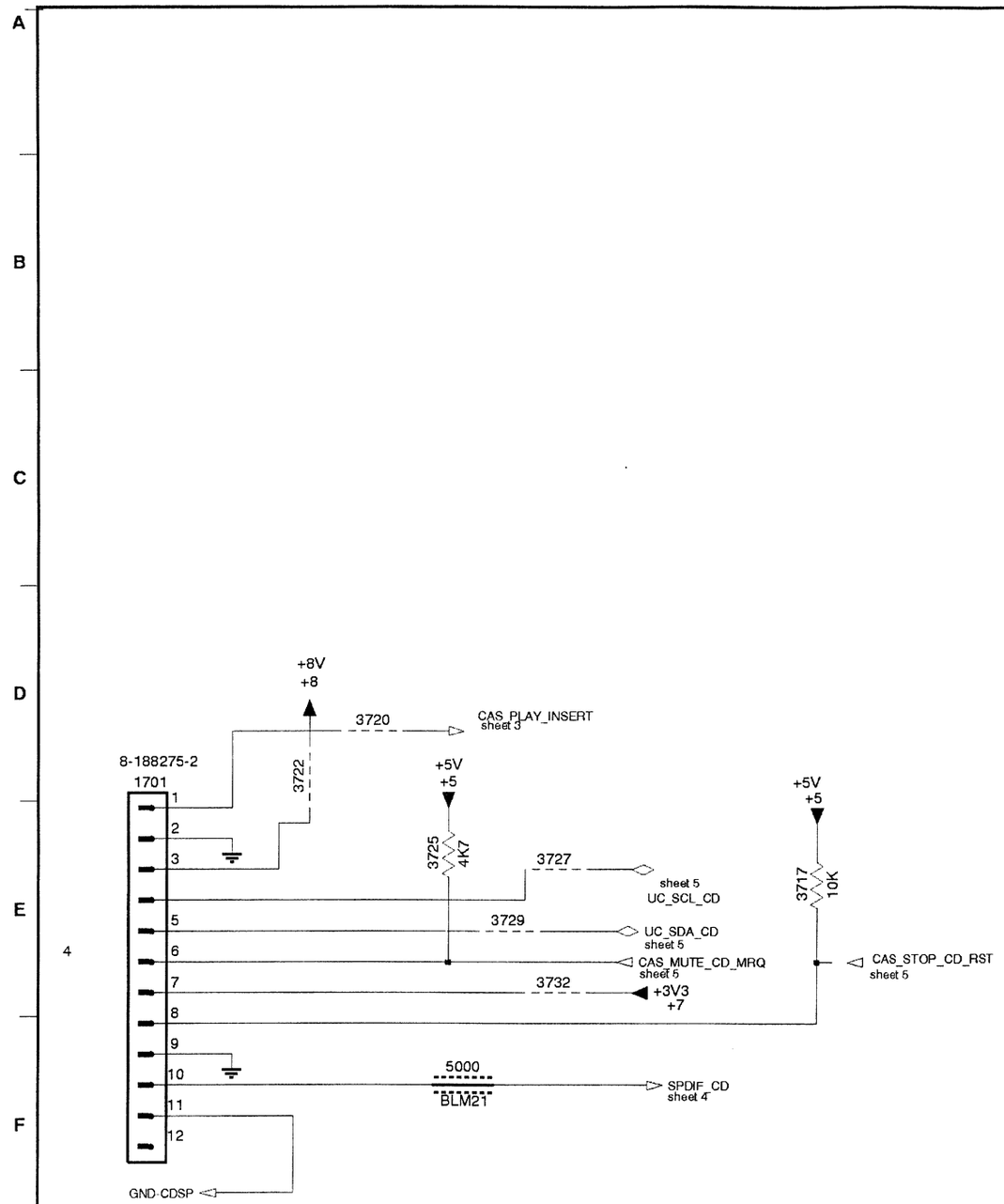
2300 A7
2301 A8
2302 A7
2303 A7
2306 B3
2307 B4
2308 B7
2309 C8
2310 C7
2311 C7
2312 C6
2313 C2
2314 C3
2315 C4
2316 C1
2317 D8
2318 D3
2319 D1
2320 D8
2321 D3
2322 D7
2323 D7
2324 D1
2325 D3
2326 D1
2327 D3
2328 E3
2329 E8
2330 E4
2331 E4
2332 E8
2333 E7
2334 E7
2335 E3
3300 A7
3301 A7
3303 A1
3305 B1
3306 B3
3307 B7
3308 B7
3309 B3
3310 C1
3311 C1
3312 C3
3313 C2
3314 C7
3315 C7
3316 D2
3317 D2
3318 D2
3319 E3
3320 E7
3321 E7
7300 C2
7301 C4

22DC279/62...

CD PART

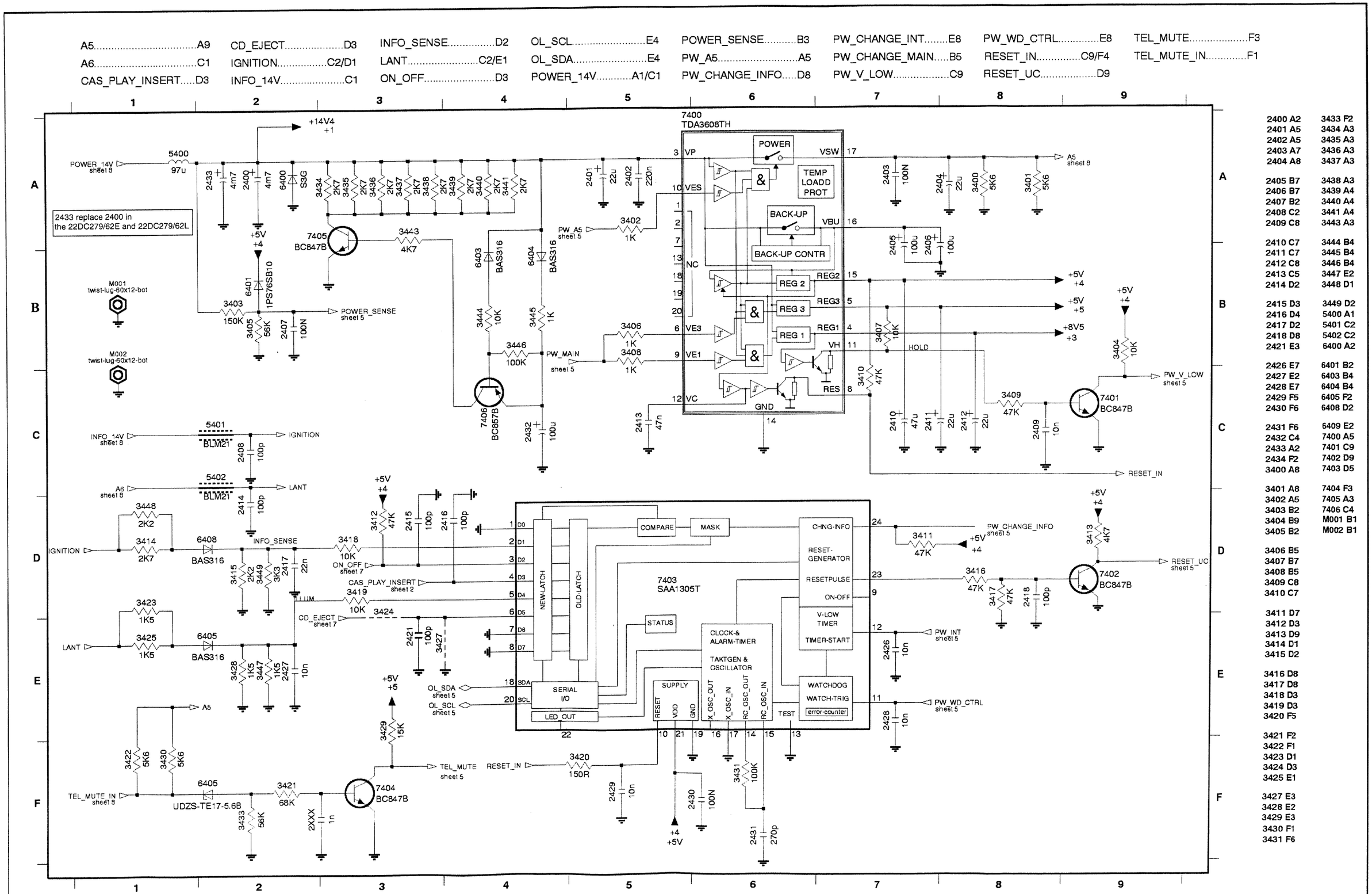
CAS_MUTE_CD_MRQ.....E3
CAS_PLAY_INSERT.....D2
UC_SCL_CD.....E3
UC_SDA_CD.....E3
SPDIF_CD.....F3

1701 D1
3717 D5
3720 D2
3722 D1
3725 E2
3727 E3
3729 E2
3732 E3
5000 F2



22DC279/62...

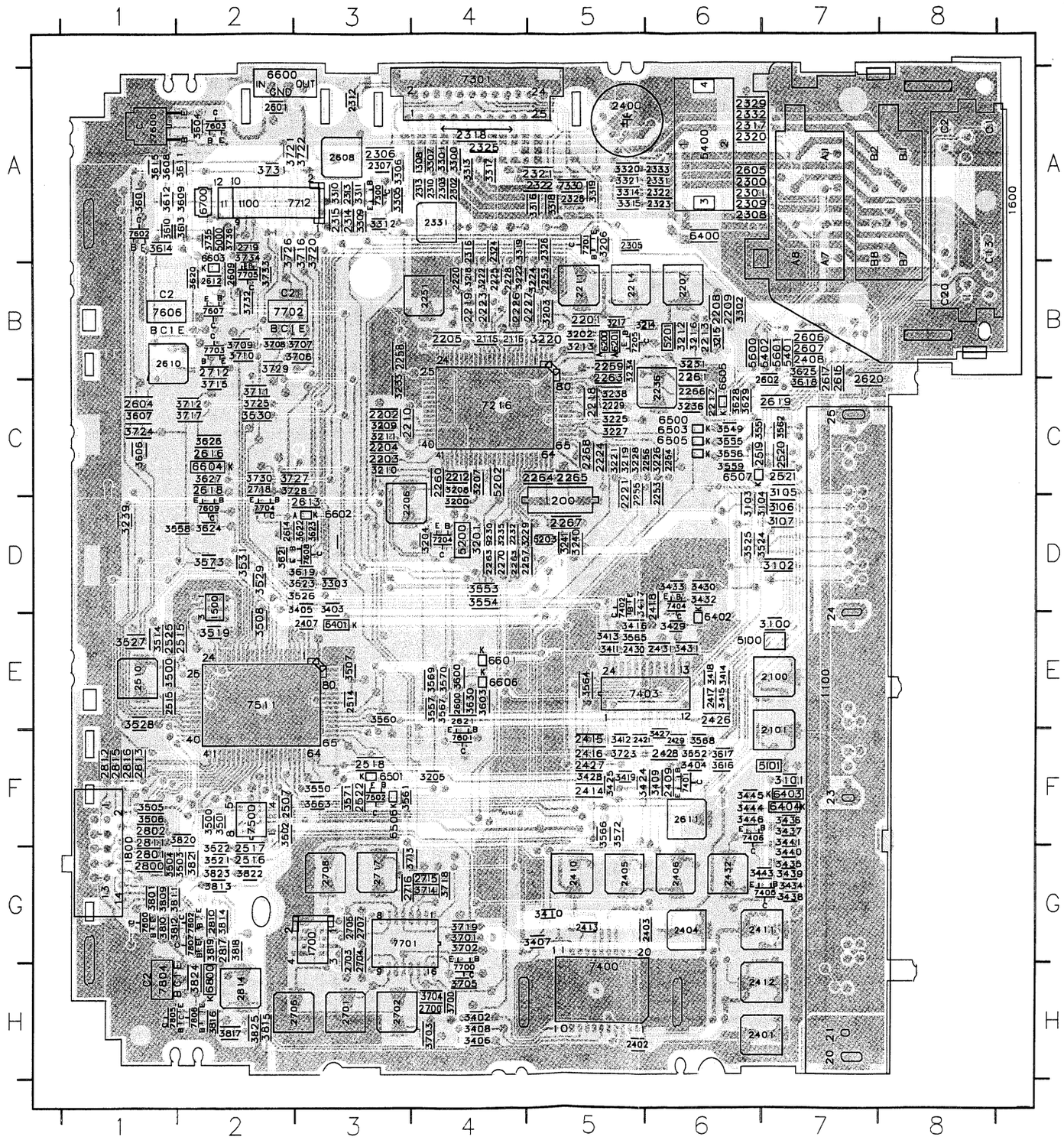
POWER SUPPLY PART



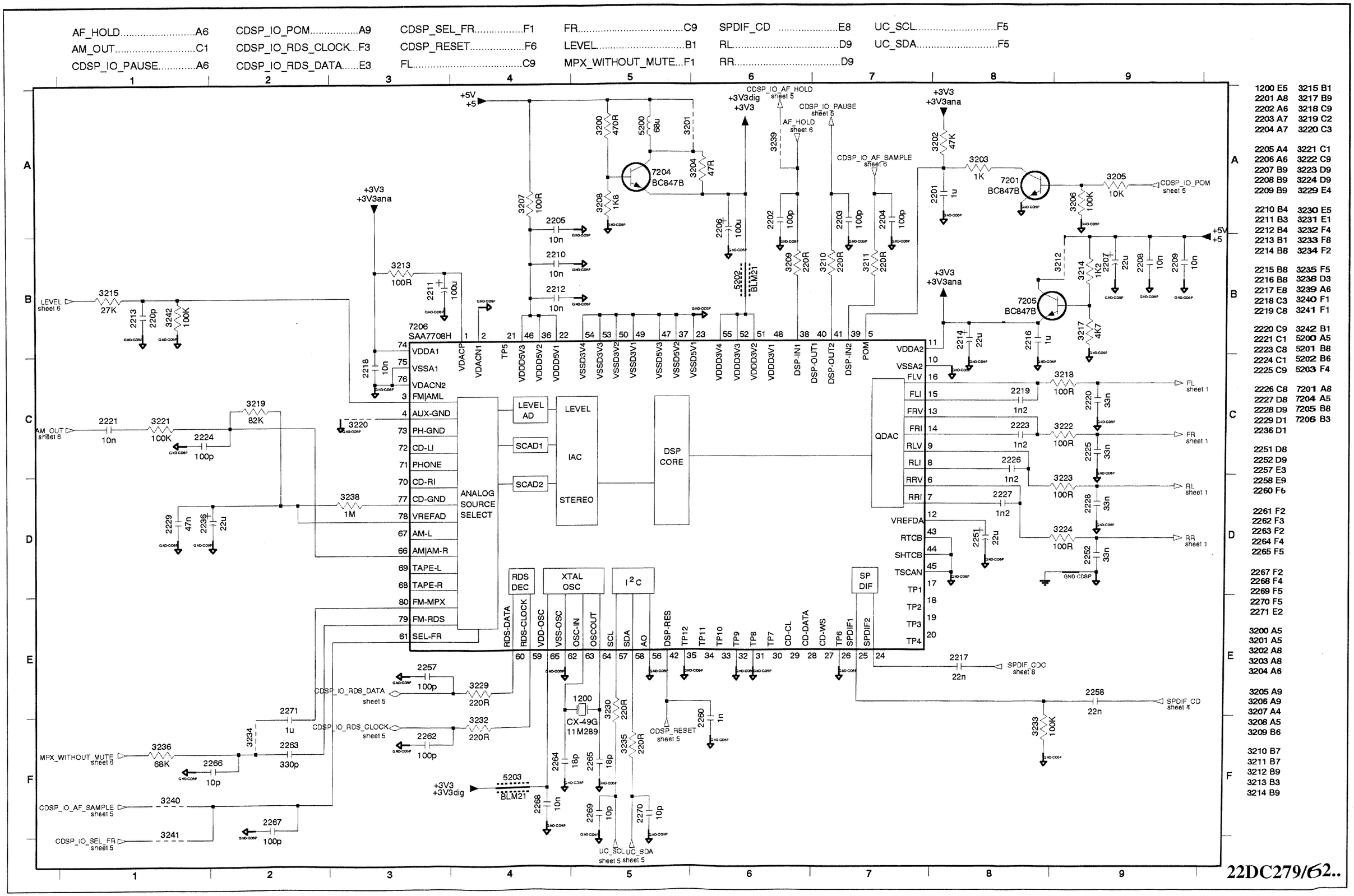
2400 A2	3433 F2	3474 B4	7401 C9
2401 A5	3434 A3	3475 B4	7402 D9
2402 A5	3435 A3	3476 B4	7403 D5
2403 A7	3436 A3	3477 C2	7404 F3
2404 A8	3437 A3	3478 C2	7405 A3
2405 B7	3438 A3	3479 C5	7406 C4
2406 B7	3439 A4	3480 D2	M001 B1
2407 B2	3440 A4	3481 D8	M002 B1
2408 C2	3441 A4	3482 E3	
2409 C8	3443 A3	3483 E2	
2410 C7	3444 B4	3484 E3	
2411 C7	3445 B4	3485 F5	
2412 C8	3446 B4	3486 F5	
2413 C5	3447 E2	3487 F5	
2414 D2	3448 D1	3488 F5	
2415 D3	3449 D2	3489 F5	
2416 D4	5400 A1	3490 F5	
2417 D2	5401 C2	3491 F5	
2418 D8	5402 C2	3492 F5	
2421 E3	6400 A2	3493 F5	
2426 E7	6401 B2	3494 F5	
2427 E2	6403 B4	3495 F5	
2428 E7	6404 B4	3496 F5	
2429 F5	6405 F2	3497 F5	
2430 F6	6408 D2	3498 F5	
2431 F6	6409 E2	3499 F5	
2432 C4	7400 A5	3500 F5	
2433 A2	7401 C9	3501 F5	
2434 F2	7402 D9	3502 F5	
3400 A8	7403 D5	3503 F5	
3401 A8	7404 F3	3504 F5	
3402 A5	7405 A3	3505 F5	
3403 B2	7406 C4	3506 F5	
3404 B9	M001 B1	3507 F5	
3405 B2	M002 B1	3508 F5	
3406 B5		3509 F5	
3407 B7		3510 F5	
3408 B5		3511 F5	
3409 C8		3512 F5	
3410 C7		3513 F5	
3411 D7		3514 F5	
3412 D3		3515 F5	
3413 D9		3516 F5	
3414 D1		3517 F5	
3415 D2		3518 F5	
3416 D8		3519 F5	
3417 D8		3520 F5	
3418 D3		3521 F5	
3419 D3		3522 F5	
3420 F5		3523 F5	
3421 F2		3524 F5	
3422 F1		3525 F5	
3423 D1		3526 F5	
3424 D3		3527 F5	
3425 E1		3528 F5	
3427 E3		3529 F5	
3428 E2		3530 F5	
3429 E3		3531 F5	
3430 F1		3532 F5	
3431 F6		3533 F5	
3432 F5		3534 F5	
3433 F5		3535 F5	
3434 F5		3536 F5	
3435 F5		3537 F5	
3436 F5		3538 F5	
3437 F5		3539 F5	
3438 F5		3540 F5	
3439 F5		3541 F5	
3440 F5		3542 F5	
3441 F5		3543 F5	
3442 F5		3544 F5	
3443 F5		3545 F5	
3444 F5		3546 F5	
3445 F5		3547 F5	
3446 F5		3548 F5	
3447 F5		3549 F5	
3448 F5		3550 F5	
3449 F5		3551 F5	
3450 F5		3552 F5	
3451 F5		3553 F5	
3452 F5		3554 F5	
3453 F5		3555 F5	
3454 F5		3556 F5	
3455 F5		3557 F5	
3456 F5		3558 F5	
3457 F5		3559 F5	
3458 F5		3560 F5	
3459 F5		3561 F5	
3460 F5		3562 F5	
3461 F5		3563 F5	
3462 F5		3564 F5	
3463 F5		3565 F5	
3464 F5		3566 F5	
3465 F5		3567 F5	
3466 F5		3568 F5	
3467 F5		3569 F5	
3468 F5		3570 F5	
3469 F5		3571 F5	
3470 F5		3572 F5	
3471 F5		3573 F5	
3472 F5		3574 F5	
3473 F5		3575 F5	

22DC279/62

VIEW_COMPONENTS. SIDE B



SOUND PROCESS PART



1200 E5 3215 B1
2201 A8 3217 B9
2202 A6 3218 C9
2203 A7 3219 C2
2204 A7 3220 C3

2205 A4 3221 C1
2206 A6 3222 C9
2207 B9 3223 D9
2208 B9 3224 D9
2209 B9 3229 E4

2210 B4 3230 E5
2211 B3 3231 E1
2212 B4 3232 F4
2213 B1 3233 F8
2214 B8 3234 F2

2215 B8 3235 F5
2216 B8 3238 D3
2217 E8 3239 A6
2218 C3 3240 F1
2219 C8 3241 F1

2220 C9 3242 B1
2221 C1 5200 A5
2223 C8 5201 B8
2224 C1 5202 B6
2225 C9 5203 F4

2226 C8 7201 A8
2227 D8 7204 A5
2228 D9 7205 B8
2229 D1 7206 B3
2236 D1

2251 D8
2252 D9
2257 E3
2258 E9
2260 F6

2261 F2
2262 F3
2263 F2
2264 F4
2265 F5

2267 F2
2268 F4
2269 F5
2270 F5
2271 E2

3200 A5
3201 A5
3202 A8
3203 A8
3204 A6

3205 A9
3206 A9
3207 A4
3208 A5
3209 B6

3210 B7
3211 B7
3212 B9
3213 B3
3214 B9

MICROCONTROLER PART

C1_STROBE.....D6
C2.....D6
C3.....D6
C4.....D6
CAS_MUTE_CD_MRQ.....D1
CAS_STOP_CD_RST.....D1

CDC_RXD.....C1
CDC_TXD.....C1
CDSP_IO_AF_HOLD.....D8
CDSP_IO_AF_SAMPLE...D6
CDSP_IO_PAUSE.....E7
CDSP_IO_POM.....E7

CDSP_IO_RDS_CLOCK...E1
CDSP_IO_RDS_DATA.....C6
CDSP_IO_SEL_FR.....C1
CDSP_RESET.....E1
EPP_SCL.....A8/E6
EPP_SDA.....A8/E6

EXT_MRQ_IO_C3.....F1
EXT_SCL_C2.....F9
EXT_SDA_C1.....E9
EXT_STRETCH_INT....C2/F4
EXT_STRETCH_IO.....F7/E6
GATEWAY_SDA.....E7

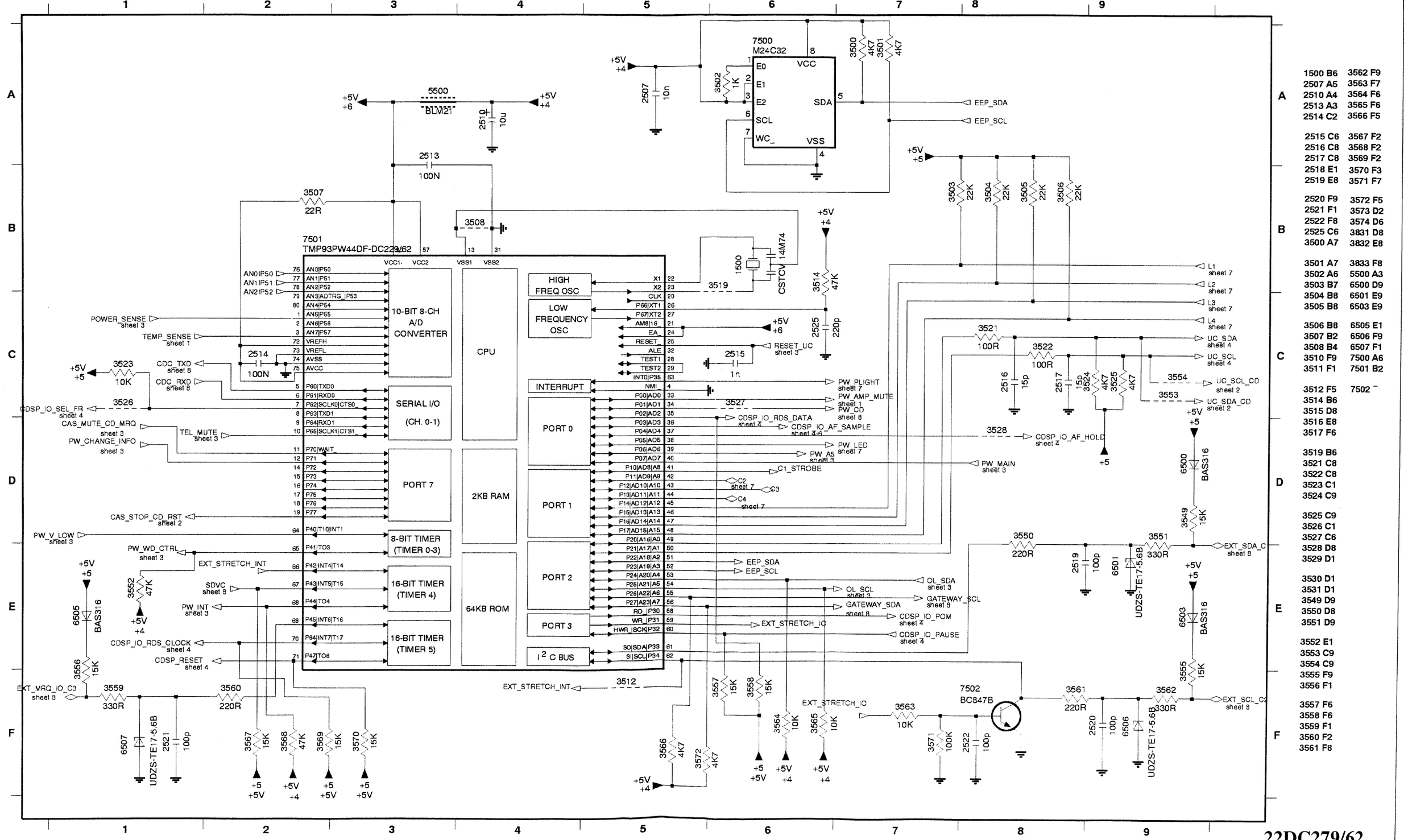
GATEWAY_SCL.....E7
L1.....B9
L2.....B9
L3.....C9
L4.....C10
OL_SCL.....E7

OL_SDA.....E7
POWER_SENSE.....C1
PW_A5.....D6
PW_AMP_MUTE.....C7
PW_CHANGE_INFO.....D1
PW_INT.....E2

PW_LED.....D7
PW_MAIN.....D8

PW_V_LOW.....D1
PW_WD_CTRL.....E1
RESET_UC.....C6

SDVC.....E2
TEL_MUTE.....D2
TEMP_SENSE.....C1
UC_SCL_CD.....C9
UC_SDA_CD.....C9



1500 B6 3562 F9
2507 A5 3563 F7
2510 A4 3564 F6
2513 A3 3565 F6
2514 C2 3566 F5

2515 C6 3567 F2
2516 C8 3568 F2
2517 C8 3569 F2
2518 E1 3570 F3
2519 E8 3571 F7

2520 F9 3572 F5
2521 F1 3573 D2
2522 F8 3574 D6
2525 C6 3831 D8
3500 A7 3832 E8

3501 A7 3833 F8
3502 A6 5500 A3
3503 B7 6500 D9
3504 B8 6501 E9
3505 B8 6503 E9

3506 B8 6505 E1
3507 B2 6506 F9
3508 B4 6507 F1
3510 F9 7500 A6
3511 F1 7501 B2

3512 F5 7502
3514 B6
3515 D8
3516 E8
3517 F6

3519 B6
3521 C8
3522 C8
3523 C1
3524 C9

3525 C9
3526 C1
3527 C6
3528 D8
3529 D1

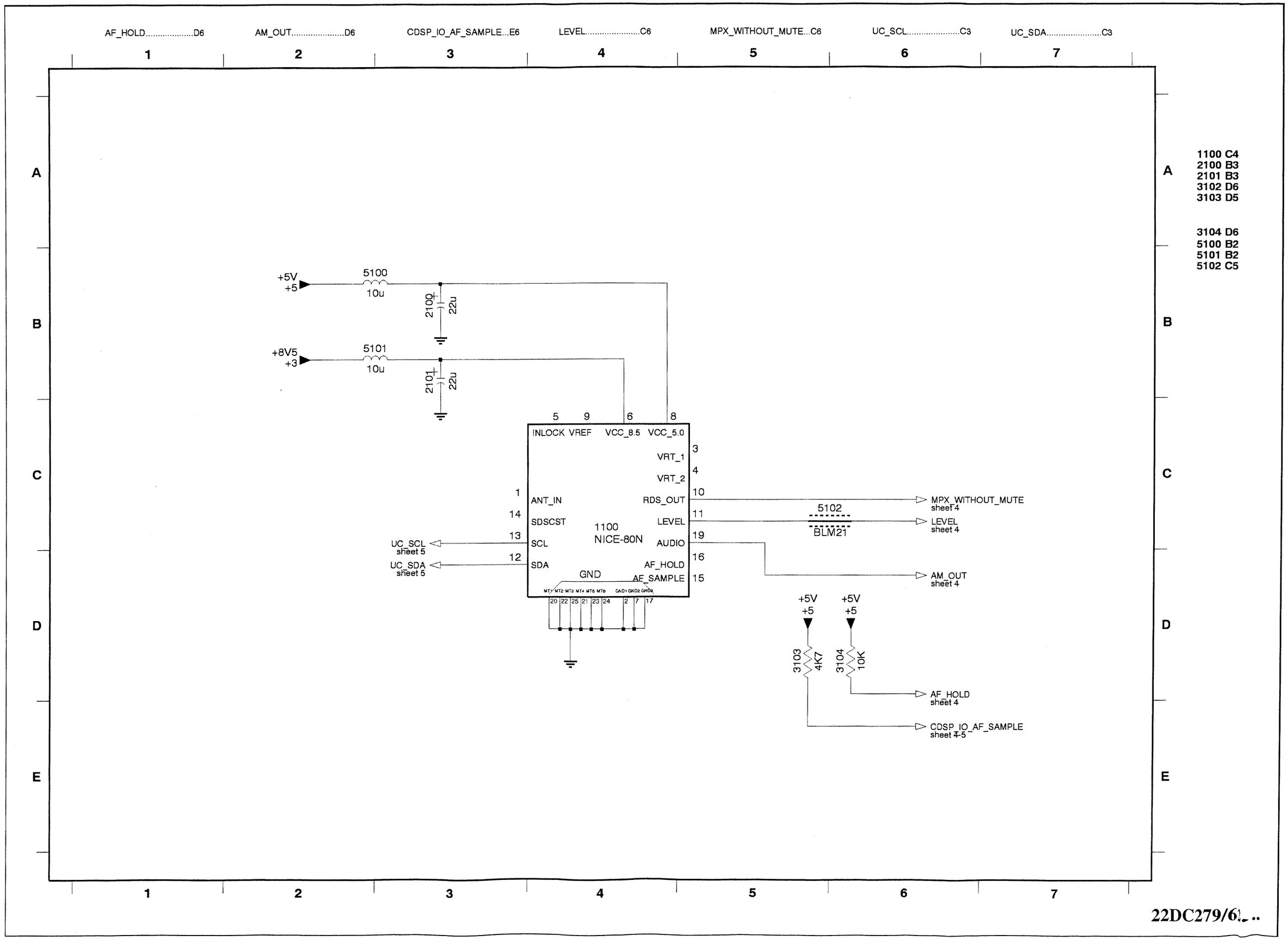
3530 D1
3531 D1
3549 D9
3550 D8
3551 D9

3552 E1
3553 C9
3554 C9
3555 F9
3556 F1

3557 F6
3558 F6
3559 F1
3560 F2
3561 F8

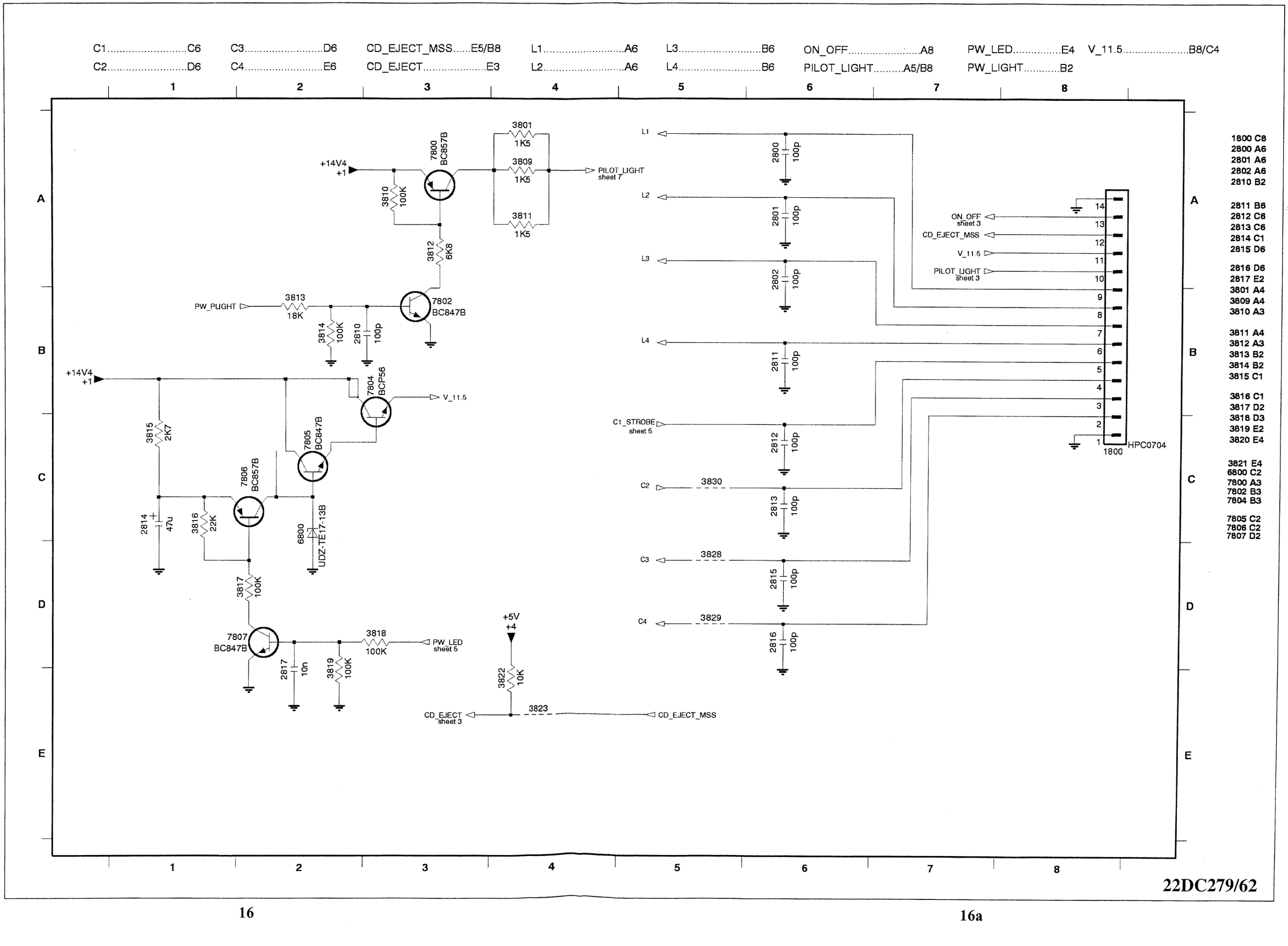
22DC279/62...

TUNER PART

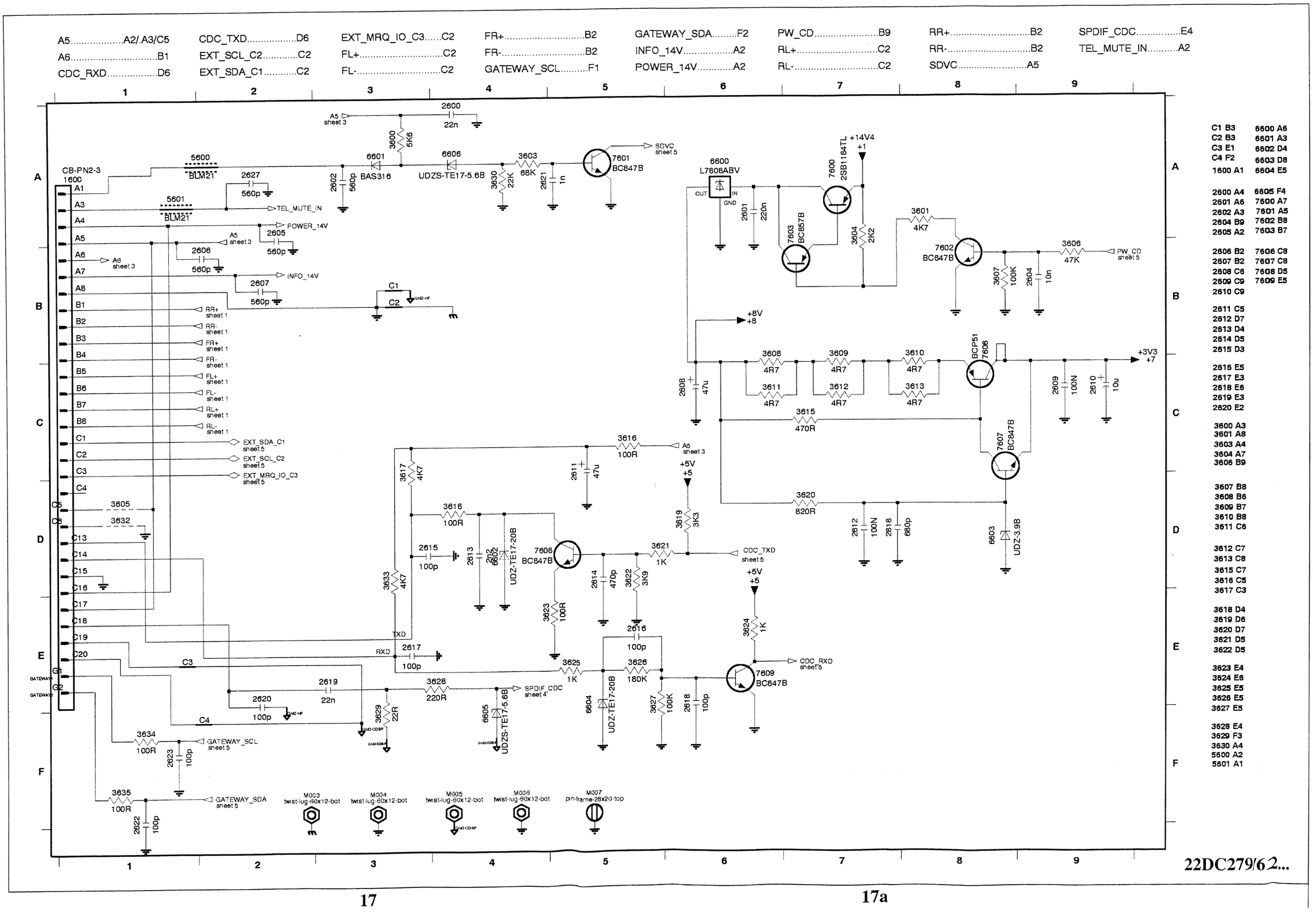


22DC279/6...

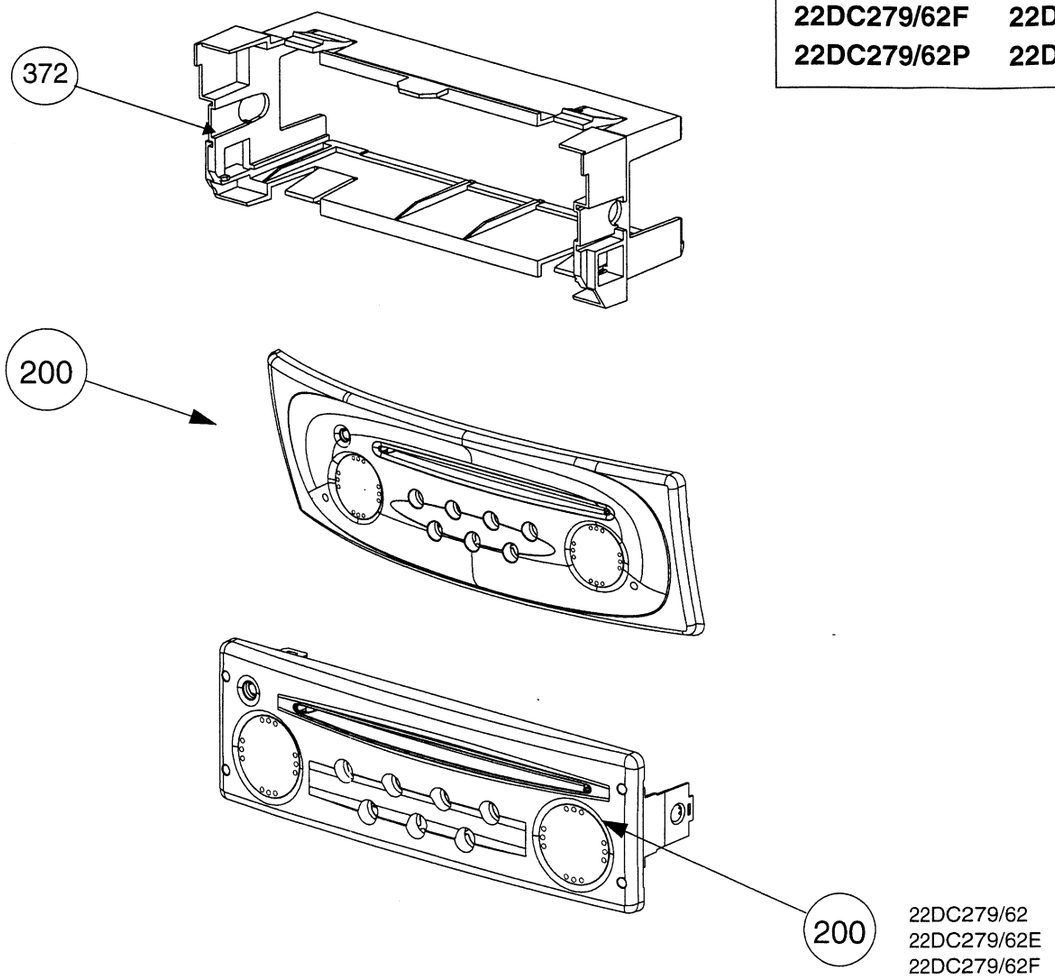
CONNECTION TO FRONT

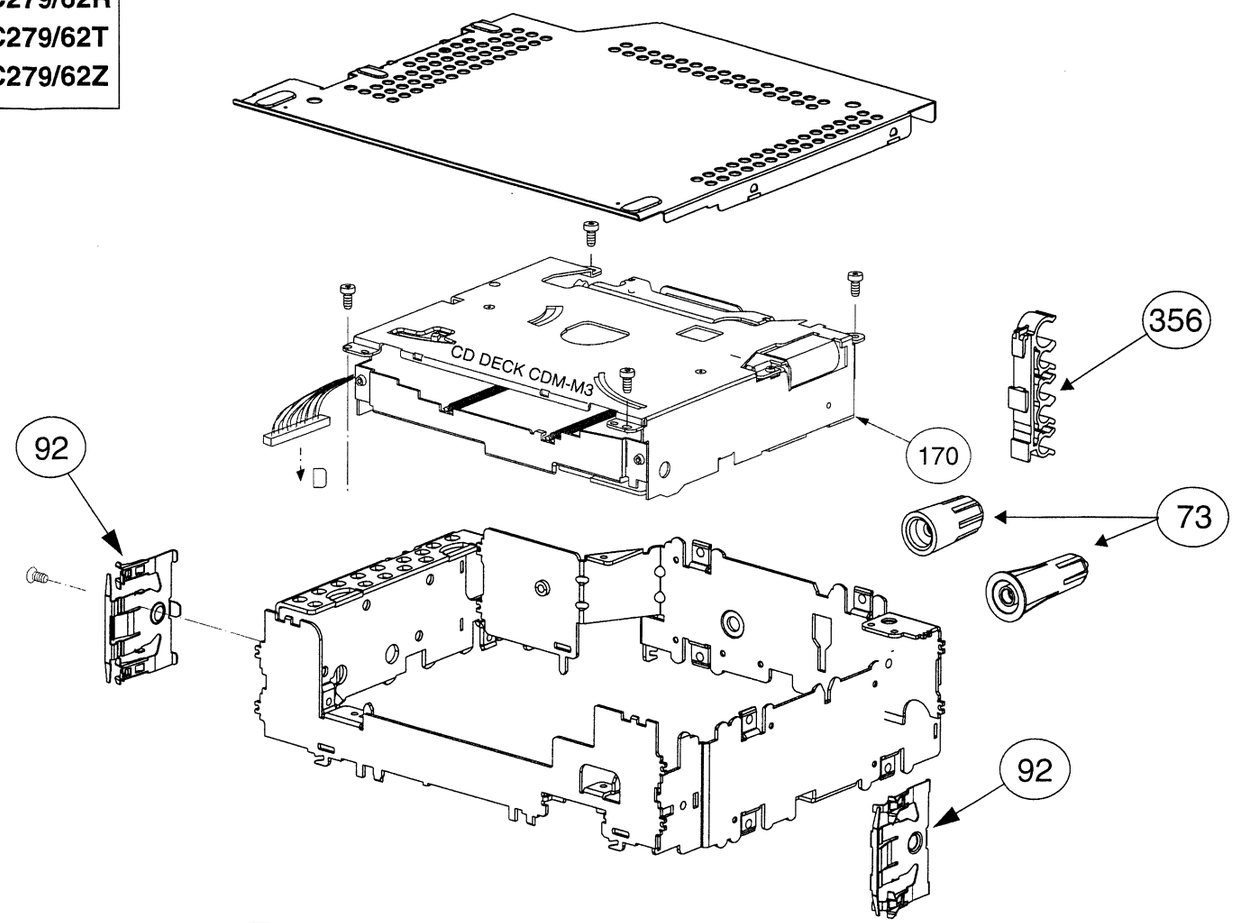


CONNECTOR BLOCK



22DC279/62 22DC279/62R
22DC279/62F 22DC279/62T
22DC279/62P 22DC279/62Z





ITEM	SERVICE CODE	DESCRIPTION	DC279/62	DC279/62E	DC279/62F	DC279/62L	DC279/62P	DC279/62R	DC279/62T	DC279/62W	DC279/62Z
73	3111 114 48390	BUFFER MOUNTING	1	1	1	1		1		1	
	3111 114 67400	BUFFER MOUNTING					1		1		1
92	3111 111 07140	SPRING MOUNTING	2	2	2	2	2	2	2	2	2
150	3112 358 69641	CD DECK CDM-M3/4.4	1	1	1	1	1	1	1	1	1
200	3111 118 76180	ORNAMENTAL PLATE ASSY	1							1	
	3111 118 77100	ORNAMENTAL PLATE ASSY		1							
	3111 118 76610	ORNAMENTAL PLATE ASSY			1						
	3111 118 76790	ORNAMENTAL PLATE ASSY				1					
	3111 118 76330	ORNAMENTAL PLATE ASSY					1				
	3111 118 76170	ORNAMENTAL PLATE ASSY						1			
	3111 118 76340	ORNAMENTAL PLATE ASSY							1		
	3111 118 76800	ORNAMENTAL PLATE ASSY									1
205	3111 118 76160	DECK BUTTON ASSY	1			1					
	3111 118 76310	DECK BUTTON ASSY			1						
	3111 118 76320	DECK BUTTON ASSY		1			1				
	3111 118 76820	DECK BUTTON ASSY						1			
356	3111 114 69273	FASTENING CABLE	1	1	1	1	1	1			
372	3111 114 68970	SLEEVE					1	1	1		

Miscellaneous					
375	3111 115 33980	DIRECTION FOR USE	1500	2422 540 98436	RES CER SM 14M74
1100	3111 117 13180	TUNER NICE 80N	1600	3111 117 13190	CONNECTOR BLOCK
1200	2422 543 01057	RES XTL SM 11M289			
⊣⊢					
2100	2020 024 90556	22µF 20% 25V	2311	4822 126 14585	100nF 10% X7R 0805 50V
2101	2020 024 90556	22µF 20% 25V	2312	4822 126 14585	100nF 10% X7R 0805 50V
2201	4822 126 14043	1µF +80-20% Y5V 16V	2313	5322 122 32531	100pF 5%NP0 50V
2202	5322 122 32531	100pF 5% NP0 50V	2314	4822 126 14043	1µF +80-20% Y5V 16V
2203	5322 122 32531	100pF 5% NP0 50V	2316	4822 126 14585	100nF 10% X7R 0805 50V
2204	5322 122 32531	100pF 5% NP0 50V	2317	2222 580 15623	1nF 10% X7R 50V 0805
2205	5322 122 34098	10nF10% X7R 63V	2318	5322 126 10223	4,7nF10%X7R 63V
2206	2020 024 90627	100µF 20% 16V	2319	4822 126 14585	100nF 10% X7R 0805 50V
2207	2020 024 90556	22µF 20% 25V	2320	2222 580 15623	1nF 10% X7R 50V 0805
2208	5322 122 34098	10nF 10% X7R 63V	2321	5322 126 10223	4,7nF10%X7R 63V
2209	5322 122 34098	10nF 10% X7R 63V	2322	4822 126 14585	100nF 10% X7R 0805 50V
2210	5322 122 34098	10nF 10% X7R 63V	2323	4822 126 14585	100nF 10% X7R 0805 50V
2211	2020 024 90627	100µF 20% 16V	2324	4822 126 14585	100nF 10% X7R 0805 50V
2212	5322 122 34098	10nF 10% X7R 63V	2325	5322 126 10223	4,7nF10%X7R 63V
2213	4822 122 33575	220pF 5% NP0 63V	2326	4822 126 14585	100nF 10% X7R 0805 50V
2214	2020 024 90556	22µF 20% 25V	2327	5322 126 10223	4,7nF10%X7R 63V
2216	4822 126 14043	1µF +80-20% Y5V 16V	2328	4822 126 14585	100nF 50V-> 62/F/P/R/T/Z
2217	5322 122 32654	22nF 0805 X7R 63V 10%	2328	2222 780 15654	220nf 16V -> /62E and /62L
2218	5322 122 34098	10nF10%X7R 63V	2329	2222 580 15623	1nF 10% X7R 50V 0805
2219	2222 580 15624	1N2 0805 X7R 50V 10%	2330	5322 126 10223	4,7nF10%X7R 63V
2220	4822 126 12105	33nF 0805 X7R 50V PM5	2331	4822 124 41842	47µF
2221	5322 122 34098	10nF10%X7R 63V	2332	2222 580 15623	1nF 10% X7R 50V 0805
2223	2222 580 15624	1N2 0805 X7R 50V 10%	2333	4822 126 14585	100nF 10% X7R 0805 50V
2224	5322 122 32531	100pF 5%NP0 50V	2334	4822 126 14585	100nF 10% X7R 0805 50V
2225	4822 126 12105	33nF 0805 X7R 50V PM5	2335	2222 78015654	220nF 16V-> /62E and /62L
2226	2222 580 15624	1N20805 X7R 50V 10%	2400	4822 124 12437	4700µF 20% 16V
2227	2222 580 15624	1N2 0805 X7R 50V 10%	2401	2020 024 90556	22µF 20% 25V
2228	4822 126 12105	33nF 0805 X7R 50V PM5	2402	2222 780 15654	220nF 10% X7R 16V 0805
2229	2222 910 15645	47nFN 0805 X7R 25V 10%	2403	4822 126 14585	100nF 10% X7R 0805 50V
2236	2020 024 90556	22µF 20% 25V	2404	2020 024 90556	22µF 20% 25V
2251	2020 024 90556	22µF 20% 25V	2405	2020 024 90627	100µF 20% 16V
2252	4822 126 12105	33nF 0805 X7R 50V PM5	2406	2020 024 90627	100µF 20% 16V
2257	5322 122 32531	100pF 5%NP0 50V	2407	4822 126 14585	100nF 10% X7R 0805 50V
2258	5322 122 32654	22N 0805 X7R 63V 10% R	2408	5322 122 32531	100pF 5%NP0 50V
2259	4822 126 14043	1µF +80-20% Y5V 16V	2409	5322 122 34098	10nF10%X7R 63V
2260	2222 580 15623	1nF 10% X7R 50V 0805	2410	4822 124 41842	47µF
2262	5322 122 32531	100pF 5%NP0 50V	2411	2020 024 90556	22µF 20% 25V
2263	5322 122 31863	330pF 0805 NP0 63V PM5	2412	2020 024 90556	22µF 20% 25V
2264	4822 126 13689	18pF 1% NP0 63V	2413	2222 910 15645	47NF 0805 X7R 25V 10%
2265	4822 126 13689	18pF 1% NP0 63V	2414	5322 122 32531	100pF 5%NP0 50V
2266	5322 122 32448	10pF 5% NP0 63V	2415	5322 122 32531	100pF 5%NP0 50V
2267	5322 122 32531	100pF 5%NP0 50V	2416	5322 122 32531	100pF 5%NP0 50V
2268	5322 122 34098	10nF10%X7R 63V	2417	4822 126 14043	1µF +80-20% Y5V 16V
2269	5322 122 32448	10pF 5% NP0 63V	2418	5322 122 32531	100pF 5%NP0 50V
2270	5322 122 32448	10pF 5% NP0 63V	2421	5322 122 32531	100pF 5%NP0 50V
2300	2222 580 15623	1nF 10% X7R 50V 0805	2426	5322 122 34098	10nF10%X7R 63V
2301	2222 580 15623	1nF 10% X7R 50V 0805	2427	5322 122 34098	10nF10%X7R 63V
2302	4822 126 14585	100nF 10% X7R 0805 50V	2428	5322 122 34098	10nF10%X7R 63V
2303	4822 126 14585	100nF 10% X7R 0805 50V	2429	5322 122 34098	10nF10%X7R 63V
2305	4822 126 14585	100nF 10% X7R 0805 50V	2430	4822 126 14585	100nF 10% X7R 0805 50V
2306	4822 126 14043	1µF +80-20% Y5V 16V	2431	4822 122 33216	270pF 5%NP0 50V
2307	4822 126 14585	100nF 10% X7R 0805 50V	2432	2020 024 90627	100µF 20% 16V
2308	2222 580 15623	1nF 10% X7R 50V 0805	2433	2020 021 91539	6800µF 16V -> /62E and /62L
2309	2222 580 15623	1nF 10% X7R 50V 0805	2507	5322 122 34098	10nF 10%X7R 63V
2310	4822 126 14585	100nF 10% X7R 0805 50V	2510	4822 124 12082	10µF 20% SM 50V

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2513	4822 126 14585	100nF 10% X7R 0805 50V	2613	2222 580 15627	2N2 0805 X7R 50V 10% R
2514	4822 126 14585	100nF 10% X7R 0805 50V	2614	5322 122 32268	470P 0805 NP0 63V PM5
2515	2222 580 15623	1nF 10% X7R 50V 0805	2615	5322 122 32531	100pF 5% NP0 50V
2516	4822 126 13486	15pF 2% NP0 63V			
2517	4822 126 13486	15pF 2% NP0 63V	2616	5322 122 32531	100pF 5% NP0 50V
			2617	5322 122 32531	100pF 5% NP0 50V
2519	5322 122 32531	100pF 5%NP0 50V	2618	5322 122 32531	100pF 5% NP0 50V
2520	5322 122 32531	100pF 5%NP0 50V	2619	5322 122 32654	22N 0805 X7R 63V 10% R
2521	5322 122 32531	100pF 5%NP0 50V	2620	5322 122 32531	100pF 5%NP0 50V
2522	5322 122 32531	100pF 5%NP0 50V			
2525	4822 122 33575	220pF 5% NP0 63V	2621	2222 580 15623	1nF 10% X7R 50V 0805
			2800	5322 122 32531	100pF 5%NP0 50V
2600	5322 122 32654	22NF 0805 X7R 63V 10% R	2801	5322 122 32531	100pF 5%NP0 50V
2601	2222 780 15654	220nF 10% X7R 16V 0805	2802	5322 122 32531	100pF 5% NP0 50V
2602	5322 116 80853	560pF 5%NP0 63V	2810	5322 122 32531	100pF 5% NP0 50V
2604	5322 122 34098	10nF10%X7R 63V			
2605	5322 122 32531	100pF 5%NP0 50V	2811	5322 122 32531	100pF 5% NP0 50V
			2812	5322 122 32531	100pF 5% NP0 50V
2606	5322 122 32531	100pF 5%NP0 50V	2813	5322 122 32531	100pF 5% NP0 50V
2607	5322 122 32531	100pF 5%NP0 50V	2814	4822 124 41842	47µF
2608	4822 124 41842	47µF	2815	5322 122 32531	100pF 5% NP0 50V
2609	4822 126 14585	100nF 10% X7R 0805 50V			
2610	4822 124 12082	10µF 20% SM 50V	2816	5322 122 32531	100pF 5% NP0 50V
			2817	5322 122 34098	10nF10% X7R 63V
2611	4822 124 41842	47µF			
2612	4822 126 14585	100nF 10% X7R 0805 50V			
⊣▭⊢					
3103	4822 051 20472	4K70 5% 0,1W	3241	4822 051 20008	0R00 JUMP. (0805)
3104	4822 117 10833	10K 1% 0,1W	3300	4822 051 20478	4R70 5% 0,1W
3200	4822 051 20471	470R00 5% 0,1W	3301	4822 051 20478	4R70 5% 0,1W
3201	4822 051 20008	0R00 JUMP. (0805)	3302	4822 117 10833	10K 1% 0,1W
3202	4822 117 10834	47K 1% 0,1W	3303	4822 051 20472	4K70 5% 0,1W
3203	4822 051 20102	1K00 5% 0,1W	3305	4822 116 10062	470R 50% 16V PTC 0805
3204	4822 051 20479	47R00 5% 0,1W	3306	4822 117 10833	10K 1% 0,1W
3205	4822 117 10833	10K 1% 0,1W	3307	4822 051 20478	4R70 5% 0,1W
3206	4822 117 10837	100K 1% 0.1W	3308	4822 051 20478	4R70 5% 0,1W
3207	4822 051 20101	100R00 5% 0,1W	3309	4822 051 20008	0R00 JUMP. (0805)
3208	4822 051 20182	1K80 5% 0,1W	3310	4822 117 10833	10K 1% 0,1W
3209	4822 117 11503	220R 1% 0.1W	3311	4822 117 10837	100K 1% 0.1W
3210	4822 117 11503	220R 1% 0.1W	3312	4822 051 20683	68K00 5% 0,1W
3211	4822 117 11503	220R 1% 0.1W	3313	4822 051 20102	1K00 5% 0,1W
3212	4822 051 20008	0R00 JUMP. (0805)	3314	4822 051 20478	4R70 5% 0,1W
3213	4822 051 20101	100R00 5% 0,1W	3315	4822 051 20478	4R70 5% 0,1W
3214	4822 051 20122	1K20 5% 0,1W	3316	4822 051 20102	1K00 5% 0,1W
3215	4822 051 20273	27K00 5% 0,1W	3317	4822 051 20102	1K00 5% 0,1W
3216	4822 117 10837	100K 1% 0.1W	3318	4822 051 20102	1K00 5% 0,1W
3217	4822 051 20472	4K70 5% 0,1W	3319	4822 051 20102	1K -> 62/F/P/R/T/Z
3218	4822 051 20101	100R00 5% 0,1W	3319	4822 117 11504	270R 5% -> /62E and /62L
3219	4822 117 11149	82K 1% 0,1W	3320	4822 051 20478	4R70 5% 0,1W
3220	4822 051 20008	0R00 JUMP. (0805)	3321	4822 051 20478	4R70 5% 0,1W
3221	4822 117 10837	100K 1% 0.1W	3402	4822 051 20102	1K00 5% 0,1W
3222	4822 051 20101	100R00 5% 0,1W	3403	4822 051 20154	150K00 5% 0,1W
3223	4822 051 20101	100R00 5% 0,1W	3404	4822 117 10833	10K 1% 0,1W
3224	4822 051 20101	100R00 5% 0,1W	3405	4822 117 11148	56K 1% 0,1W
3229	4822 117 11503	220R 1% 0.1W	3406	4822 051 20102	1K00 5% 0,1W
3230	4822 117 11503	220R 1% 0.1W	3407	4822 117 10833	10K 1% 0,1W
3232	4822 117 11503	220R 1% 0.1W	3408	4822 051 20102	1K00 5% 0,1W
3234	4822 051 20008	0R00 JUMP. (0805)	3409	4822 117 10834	47K 1% 0,1W
3235	4822 117 11503	220R 1% 0.1W	3410	4822 117 10834	47K 1% 0,1W
3236	4822 051 20683	68K00 5% 0,1W	3411	4822 117 10834	47K 1% 0,1W
3238	4822 051 20105	1M00 5% 0,1W	3412	4822 117 10834	47K 1% 0,1W
3239	4822 051 20008	0R00 JUMP. (0805)	3413	4822 051 20472	4K70 5% 0,1W

3414	4822 051 20332	3K30 5% 0,1W	3564	4822 117 10834	47K 1% 0,1W
3415	4822 051 20182	1K80 5% 0,1W	3565	4822 117 10834	47K 1% 0,1W
3416	4822 117 10834	47K 1% 0,1W	3566	4822 051 20472	4K70 5% 0,1W
3417	4822 117 10834	47K 1% 0,1W	3567	4822 116 83933	15K 1% 0,1W
3418	4822 117 10833	10K 1% 0,1W	3568	4822 117 10834	47K 1% 0,1W
3419	4822 117 10833	10K 1% 0,1W	3569	4822 116 83933	15K 1% 0,1W
3424	4822 051 20008	0R00 JUMP. (0805)	3570	4822 116 83933	15K 1% 0,1W
3425	4822 051 20332	3K30 5% 0,1W	3571	4822 117 10837	100K 1% 0.1W
3428	4822 051 20182	1K80 5% 0,1W	3572	4822 051 20472	4K70 5% 0,1W
3429	4822 117 10833	10K 1% 0,1W	3600	4822 117 12955	2K7 1% 0,1W 0805
3430	4822 117 11449	2K2 5% 0,1W 0805	3601	4822 051 20472	4K70 5% 0,1W
3431	4822 117 10837	100K 1% 0.1W	3603	4822 117 11507	6K8 1% 0,1W
3432	4822 117 10837	100K 1% 0.1W	3604	4822 117 11449	2K2 5% 0,1W 0805
3433	4822 051 20333	33K00 5% 0,1W	3606	4822 117 10834	47K 1% 0,1W
3434	4822 117 12955	2K7 1% 0,1W 0805	3607	4822 117 10837	100K 1% 0.1W
3435	4822 117 12955	2K7 1% 0,1W 0805	3608	4822 051 20478	4R70 5% 0,1W
3436	4822 117 12955	2K7 1% 0,1W 0805	3609	4822 051 20478	4R70 5% 0,1W
3437	4822 117 12955	2K7 1% 0,1W 0805	3610	4822 051 20478	4R70 5% 0,1W
3438	4822 117 12955	2K7 1% 0,1W 0805	3611	4822 051 20478	4R70 5% 0,1W
3439	4822 117 12955	2K7 1% 0,1W 0805	3612	4822 051 20478	4R70 5% 0,1W
3440	4822 117 12955	2K7 1% 0,1W 0805	3613	4822 051 20478	4R70 5% 0,1W
3441	4822 117 12955	2K7 1% 0,1W 0805	3615	4822 051 20471	470R00 5% 0,1W
3443	4822 051 20472	4K70 5% 0,1W	3616	4822 051 20101	100R00 5% 0,1W
3444	4822 117 10833	10K 1% 0,1W	3617	4822 051 20472	4K70 5% 0,1W
3445	4822 051 20102	1K00 5% 0,1W	3618	4822 051 20101	100R00 5% 0,1W
3446	4822 117 10837	100K 1% 0.1W	3619	4822 051 20332	3K30 5% 0,1W
3500	4822 051 20472	4K70 5% 0,1W	3620	4822 117 11454	820R 1% 0,1W
3501	4822 051 20472	4K70 5% 0,1W	3621	4822 051 20102	1K00 5% 0,1W
3502	4822 051 20102	1K00 5% 0,1W	3622	4822 117 11139	1K5 1% 0,1W
3503	4822 051 20223	22K00 5% 0,1W	3623	4822 051 20101	100R00 5% 0,1W
3504	4822 051 20223	22K00 5% 0,1W	3624	4822 051 20102	1K00 5% 0,1W
3505	4822 051 20223	22K00 5% 0,1W	3625	4822 051 20102	1K00 5% 0,1W
3506	4822 051 20223	22K00 5% 0,1W	3626	4822 051 20184	180K00 5% 0,1W
3507	4822 051 20229	22R00 5% 0,1W	3627	4822 117 10837	100K 1% 0.1W
3508	4822 051 20008	0R00 JUMP. (0805	3628	4822 117 11503	220R 1% 0.1W
3514	4822 117 10834	47K 1% 0,1W	3629	4822 051 20229	22R00 5% 0,1W
3519	4822 051 20008	0R00 JUMP. (0805)	3630	4822 117 11504	270R 1% 0.1W
3521	4822 051 20101	100R00 5% 0,1W	3717	4822 117 10833	10K 1% 0,1W
3522	4822 051 20101	100R00 5% 0,1W	3720	4822 051 20008	0R00 JUMP. (0805)
3523	4822 117 10833	10K 1% 0,1W	3722	4822 051 20008	0R00 JUMP. (0805)
3524	4822 051 20472	4K70 5% 0,1W	3723	4822 117 10837	100K 1% 0.1W
3525	4822 051 20472	4K70 5% 0,1W	3724	4822 051 20008	0R00 JUMP. (0805)
3526	4822 051 20008	0R00 JUMP. (0805)	3725	4822 051 20472	4K70 5% 0,1W
3527	4822 051 20008	0R00 JUMP. (0805)	3727	4822 051 20008	0R00 JUMP. (0805)
3528	4822 051 20008	0R00 JUMP. (0805)	3729	4822 051 20008	0R00 JUMP. (0805)
3549	4822 116 83933	15K 1% 0,1W	3732	4822 051 20008	0R00 JUMP. (0805)
3550	4822 117 11503	220R 1% 0.1W	3801	4822 117 11139	1K5 1% 0,1W
3551	4822 117 13577	330R 1% 0805 1,25W	3809	4822 117 11139	1K5 1% 0,1W
3552	4822 117 10834	47K 1% 0,1W	3810	4822 117 10837	100K 1% 0.1W
3553	4822 051 20008	0R00 JUMP. (0805)	3811	4822 117 11139	1K5 1% 0,1W
3554	4822 051 20008	0R00 JUMP. (0805)	3812	4822 117 11507	6K8 1% 0,1W
3555	4822 116 83933	15K 1% 0,1W	3813	4822 117 10965	18K 1% 0,1W
3556	4822 116 83933	15K 1% 0,1W	3814	4822 117 10837	100K 1% 0.1W
3557	4822 116 83933	15K 1% 0,1W	3815	4822 117 12955	2K7 1% 0,1W 0805
3558	4822 116 83933	15K 1% 0,1W	3816	4822 051 20223	22K00 5% 0,1W
3559	4822 117 13577	330R 1% 0805 1,25W	3817	4822 117 10837	100K 1% 0.1W
3560	4822 117 11503	220R 1% 0.1W	3818	4822 117 10837	100K 1% 0.1W
3561	4822 117 11503	220R 1% 0.1W	3819	4822 117 10837	100K 1% 0.1W
3562	4822 117 13577	330R 1% 0805 1,25W	3822	4822 117 10833	10K 1% 0,1W
3563	4822 117 10833	10K 1% 0,1W	3823	4822 051 20008	0R00 JUMP. (080

5000	4822 157 71206	BLM21A601SPT	5401	4822 157 71206	BLM21A601SPT
5100	4822 157 71314	10UH (NL322522T-100J)	5402	4822 157 71206	BLM21A601SPT
5101	4822 157 71314	10UH (NL322522T-100J)	5500	4822 157 71206	BLM21A601SPT
5102	4822 157 71206	BLM21A601SPT	5600	4822 157 71206	BLM21A601SPT
5202	4822 157 71206	BLM21A601SPT	5601	4822 157 71206	BLM21A601SPT
5203	4822 157 71206	BLM21A601SPT			
5400	4822 157 70935				
6400	4822 130 10488	S3G	6506	4822 130 10185	UDZS5.6B
6401	4822 130 11528	1PS76SB10	6507	4822 130 10185	UDZS5.6B
6402	4822 130 11397	BAS316	6601	4822 130 11397	BAS316
6403	4822 130 11397	BAS316	6602	4822 130 10656	UDZ20B
6404	4822 130 11397	BAS316	6603	4822 130 11564	UDZ3.9B
6500	4822 130 11397	BAS316	6604	4822 130 10656	UDZ20B
6501	4822 130 10185	UDZS5.6B	6605	4822 130 10185	UDZS5.6B
6503	4822 130 11397	BAS316	6606	4822 130 10838	UDZ3.3B
6505	4822 130 11397	BAS316	6800	4822 130 11149	UDZ13B
7201	5322 130 60159	BC846B			
7204	5322 130 60159	BC846B			
7205	5322 130 60159	BC846B			
7206	9352 637 60557	IC SM SAA7708H/N203			
7300	5322 130 60159	BC846B			
7301	9322 129 93667	TDA7385 -> 62/F/P/R/T/Z			
7301	9322 129 80667	TDA7386 -> /62E and /62L			
7400	9352 629 23118	TDA3608TH/N3			
7401	5322 130 60159	BC846B			
7402	5322 130 60159	BC846B			
7403	4822 209 16279	SAA1305T			
7404	5322 130 60159	BC846B			
7405	5322 130 60159	BC846B			
7406	4822 130 60373	BC856B			
7501	3111 117 41220	IC TMP93CW44DF			
7502	5322 130 60159	BC846B			
7600	9322 133 13668	2SB1184-R			
7601	5322 130 60159	BC846B			
7602	5322 130 60159	BC846B			
7603	4822 130 60373	BC856B			
7606	5322 130 62639				
7607	5322 130 60159	BC846B			
7608	5322 130 60159	BC846B			
7609	5322 130 60159	BC846B			
7800	4822 130 60373	BC856B			
7802	5322 130 60159	BC846B			
7804	5322 130 63033	BCP56			
7805	5322 130 60159	BC846B			
7806	4822 130 60373	BC856B			
7807	5322 130 60159	BC846B			

Philips Car Systems

automotive mannesmann VDO

Car Cassette Deck SCA-R3.3 SCA-R3.1

Service Manual

12 V

1. GENERAL

The SCA-R3.3 is a full-logic Servo Controlled Autoreverse tape deck which is fully µP-controlled.
The deck is controlled by the headset via the standardized I²C bus.
Version -R3.3 is the standard version with an 8-pole MOLEX PICOFLEX interface connector.
The SCA-R3.1 has an 11-pole MOLEX SPOX interface cable.
Mechanically the -R3.1 version is the same as the -R3.3.

2. TECHNICAL DATA

Operating voltages	:	10.0 - 16VDC (V1) (13.2VDC nom.) 4.75 - 5.25VDC (V2) (5.0VDC nom.)
Tape speed	:	4.76 cm/s (-1..+3%)
Number of tracks	:	2 x 2
Wow and Flutter	:	≤ 0.3% DIN weighted
S/N ratio	:	≥ 46dB (measured at preamplifier)
Crosstalk suppression (track 2-3)	:	≥ 50dB
Channel separation (track 1-2/3-4)	:	≥ 40dB
Fast winding time	:	≤ 100 sec (C-60)
Bus interface	:	I²C
Weight (only mechanism)	:	400 g

PCS 92 000

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3. MAINTENANCE

The tape deck mechanism requires periodic cleaning.

3.1 Cleaning cassette

- Use drop-in cleaning cassette SBC114 (4822 389 20035)

3.2 Cleaning with alcohol or spirit

- Cleaning with alcohol or spirit is also possible.
- Especially the following parts need cleaning:
  - Playback head pos. 28.
  - Capstans pos. 9/11 and pressure roller assy pos. 42.
  - Pulley pos. 10 and motor pulley.

4. ADJUSTMENTS AND CHECKS

4.1 Equipment

Equipment required:

- Universal test cassette SBC419 - 4822 397 30069
- Universal test cassette SBC420 - 4822 397 30071
- Friction test cassette 811/CTM - 4822 395 30054
- Spring scale 50-500g - 4822 395 80028
- Jig / puller for clutch 4822 395 60039
- Wow & Flutter meter
- AC mV meters

4.2 Roller pressure

The pressure on the capstan should be 250 - 350 grammes (2.5 - 3.5 N).
This pressure is measured as follows (in NOR and REV play):

- Select NOR play mode.
- Push the back pressure roller spindle of pos. 42 back by means of the spring scale.
- The back pressure roller can be reached via the opening at the rear of the deck (see figure i).

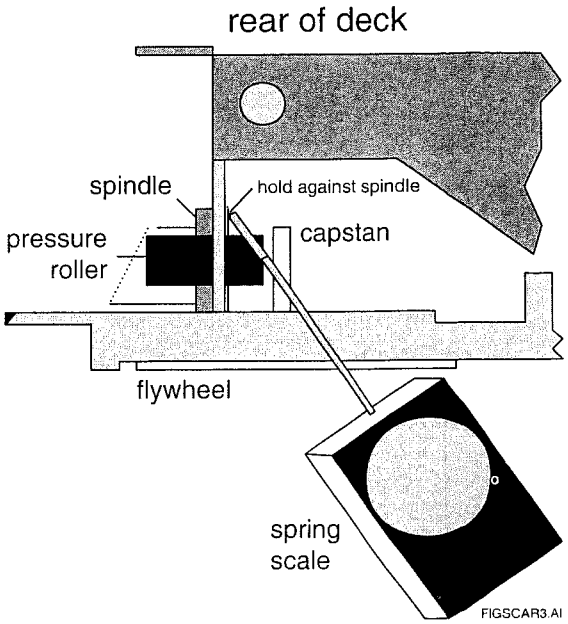


Figure i

- At the point where the pressure roller and capstan (of flywheel pos. 11) just disengage the spring scale should be read.
- If the pressure is incorrect, replace roller assy.
- Select REV play mode.
- Push the front pressure roller spindle of pos. 42 back by means of the spring scale.
- At the point where the pressure roller and capstan (of flywheel pos. 9) just disengage the spring scale should be read.
- If the pressure is incorrect, replace roller assy.

4.3 Take-up wheels pos. 21

- Insert friction test cassette 811/CTM (NOR and REV).
- Play mode take-up torque should be 3.5 - 7.5 mNm.
- Fast wind torque should be 4 - 15 mNm.
- If the torque is incorrect, replace take-up wheel(s) pos. 21.

4.4 Wow & Flutter / tape speed

This check should be carried out on a COMPLETE car radio set; proceed as follows:

- Connect the wow & flutter meter to the LS outputs.
- Insert test cassette SBC419 or SBC420 and play the 3,150 Hz signal.
- The wow & flutter value should be $\leq 0.3\%$ (DIN weighted).

- The tape speed should be 4.76 cm/s (-1..+3%).
- The tape speed can be adjusted with the screw of the capstan motor.
- This screw can be reached via the hole in the pcb pos. 86 (see figure ii).
- Use a screw driver of 1.8mm with an insulated shaft.

In case of an excessive wow & flutter value, first clean the deck as described, then check the following parts for correct functioning:

- Motors pos. 1 and 12
- Pressure rollers of pos. 42
- Belt pos. 3
- Flywheels pos. 9 and 11
- Diverting wheel (pulley) pos. 10
- All gears

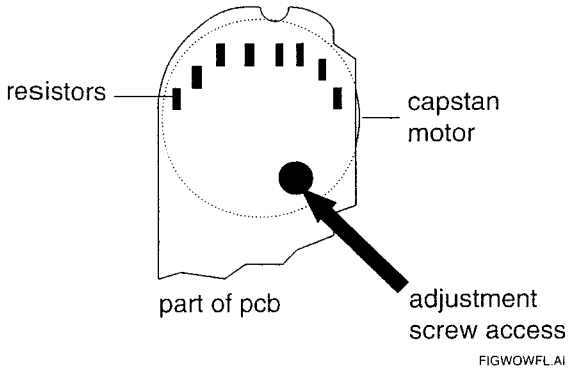


Figure ii

5. DISASSEMBLY PROCEDURE

5.1 Important

Before disassembling the tape deck, take care that the cassette holder pos. 51/52 is in the **eject** position.
Handle the cassette lift assy carefully to prevent bending it.
For re-assembling, follow the procedures in reverse order. Take care that the wires, cams etc. are in the right position again after re-assembling.
For the exact position of the parts, refer to the exploded view.

5.2 Loading position

Take care that the cassette lift and the transport disc pos. 33 are in the right position before to put it in the load position!
Be careful not to bend metal parts unnecessarily and not to damage the flywheels and belt!

5.3 Switches

To remove the

- PLAY switch pos. 100,
- STANDBY switch pos. 101,
- INSERT switch pos. 102 and/or
- ME/CR switch pos. 103,

carefully slide the switch(es) concerned out of the holder.

5.4 Capstan motor pos. 1

- Remove the belt pos. 3.
- Remove the screw pos. 88.
- Carefully slide out the pcb fixation pos. 58 and lift up the pcb pos. 86.
  Take care not to damage the black pcb supports!
- Unscrew the two screws pos. 2.
- Unsolder the capstan motor connections and take out the capstan motor.
- When re-assembling, take care that the cam on the chassis graps in the spare screw hole of the motor.

5.5 Servo motor pos. 12

- Remove the screw pos. 88.
- Carefully slide out the pcb fixation pos. 58 and lift up the pcb pos. 86.
- Take care not to damage the black pcb supports!
- Unscrew the two screws pos. 14.
- Unsolder the servo motor connections and take out the servo motor.
- When re-assembling, take care that the cam on the chassis graps in the hole of the motor.

5.6 Pressure rollers pos. 42

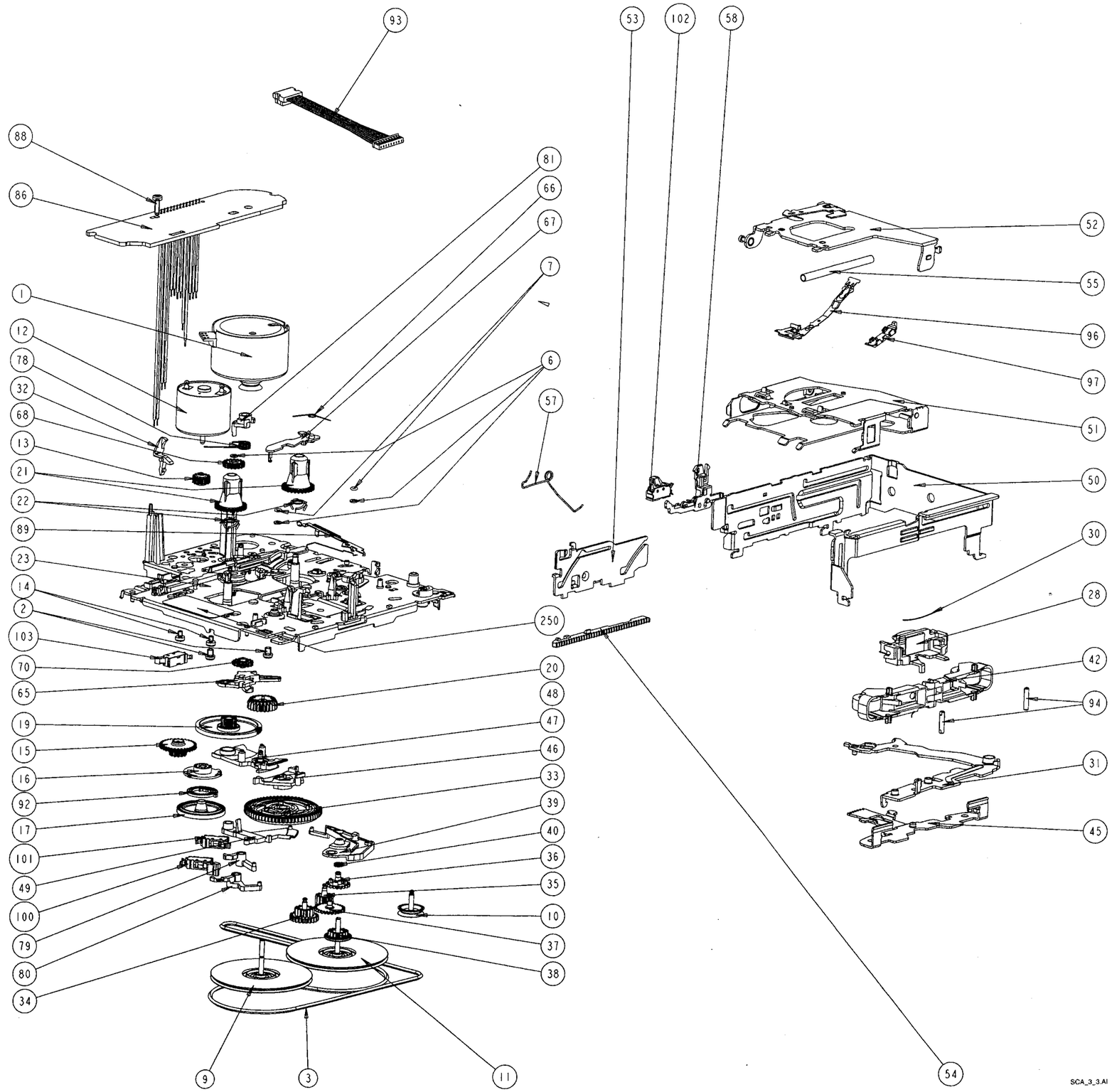
- Remove the holders with the pressure rollers by unclicking them from the centre pivot which is at the right side of the base plate pos. 23.

5.7 Head assy pos. 28

- Remove the pressure roller assy as described in section 5.6.
- Remove the spring pos. 30.
- Remove the head assy from the holder of the base plate pos. 23.

- continued on page 4 -

6. EXPLODED VIEW SCA-R3.3



5.8 Flywheel / gear assy (NOR) pos. 11

- Remove the belt pos. 3.
- Remove the oil protection ring pos. 7 from the capstan of flywheel pos. 11.
- Remove fixation retaining ring pos. 6.
- *Note: when re-assembling, use a new retaining ring*, and take care that the gear does not become damaged. Put the flywheel spindle into the bearing carefully and turn it slightly.
- Take out the flywheel.

5.9 Flywheel (REV) pos. 9

- *First* move the cassette holder to the **load** position by turning gear assy pos. 16 to the right.
  Hold the lever on pos. 52 in such a way that the cassette holder is unblocked and can move backward.
- When the cassette holder reaches the load position, the capstan of flywheel pos. 9 can be reached.
- Remove the belt pos. 3.
- Remove the oil protection ring pos. 7 from the capstan of flywheel pos. 9.
- Remove fixation retaining ring pos. 6.
- *Note: when re-assembling, use a new retaining ring!*
- Take out the flywheel.

5.10 Take-up wheel (NOR) / back tension spring pos. 21

- The cassette holder assy pos. 51/52 must be in the **eject** position.
  If the holder assy isn't yet, turn gear assy pos. 16 to the left.
- When the cassette holder reaches the load position, take-up wheel (NOR) can be reached.
- Take off take-up wheel by pulling it upward and holding the fixation snaps of the pivot together simultaneously.
- *Note:* When re-assembling, grease the pivot.

5.11 Take-up wheel (REV) / back tension spring pos. 21

- The cassette holder assy pos. 51/52 must be in the **load** position.
  If the holder assy isn't yet, turn gear assy pos. 16 to the right.
- When the cassette holder reaches the load position, take-up wheel (REV) can be reached.
- Take off take-up wheel by pulling it upward and holding the fixation snaps of the pivot together simultaneously.
- *Note:* When re-assembling, grease the pivot.

5.12 Transport disc pos. 33

- Remove belt pos. 3.
- Remove switching lever pos. 49 (*note:* Use the right tools).
- Remove play switch lever pos. 80.
- Remove standby switch lever pos. 79.
- Move the arm of switch lever assy pos. 39 away from the transport disc.
- Remove intermediate wheel pos. 34.
- Take out transport disc with help of the special jig / puller to release the three snaps. Do not damage the post!
- *Note:* the head support should be in the 'standby' position. Grease the head support assy at the right points.

5.13 Switch lever assy pos. 39 / Switch wheel 1 pos. 37

- Remove flywheel (NOR) pos. 11 as described in section 6.
- Remove switch wheel 1 pos. 37 with help of the special jig/puller.
- Take out switch lever assy.
- Take out switch lever assy.

5.14 Gear rod pos. 54 / Lift wheel gear pos. 68

- Remove the cassette loading assy pos. 50 as described before.
- Take out gear rod.
- Remove fixation retaining ring pos. 6.
- *Note: when re-assembling, use a new ring*!
- Take out lift wheel gear.

5.15 Servo drive gear assy

- *Note:* Use the right tools.
- Remove damping gear assy pos. 16.
- Remove switching lever pos. 49.
- Remove swivel level assy pos. 47.
- Take out connection wheel pos. 19.
- Take out gear cluster pos. 15.

Important: when re-assembling, oil the gear bearings.

5.16 Diverting wheel pos. 10

- Remove belt pos. 3.
- Remove the diverting wheel with help of special jig / puller.
- *Note:* When re-assembling, grease the wheel in accordance with the lubrication overview.

5.17 Coupling lever assy pos. 65

- *Note:* the deck should be in the **eject** position!
- Remove damping gear assy pos. 16.
- Remove switch lever assy pos. 39 (see '**5.13**').
- Remove swivel lever assy pos. 47.
- Remove connection wheel assy pos. 19.
- Remove coupling spring pos. 66 and coupling slider pos. 67.
- Take out the coupling lever.

5.18 Re-assembly precautions

When re-assembling the deck, take care of proper mounting of the cassette loading assy. The cam of the lift plate pos. 53 (A in figure iii) should fall into the sleeve of the loading assy plate of pos. 50.
The other cam B should fall into the notch of the gear rod.
The loading assy plate should match the base plate completely. Bend the three lips back so that the loading assy plate is locked.

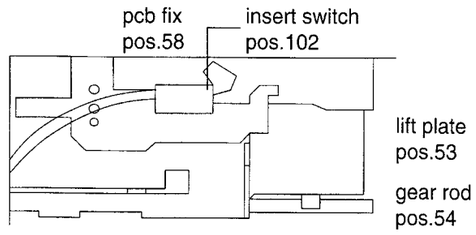


Figure iii

The belt should be mounted as indicated in the figure below.
Take care that the belt is not twisted, not touched by grease and not damaged by sharp edges of the chassis!

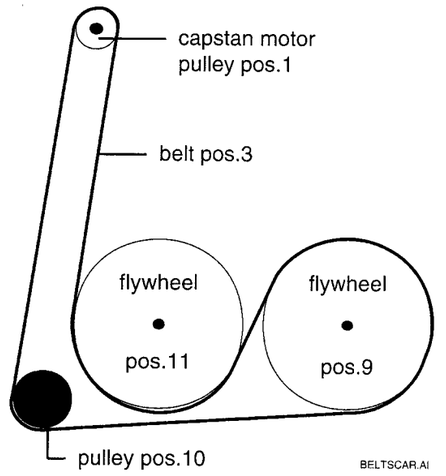
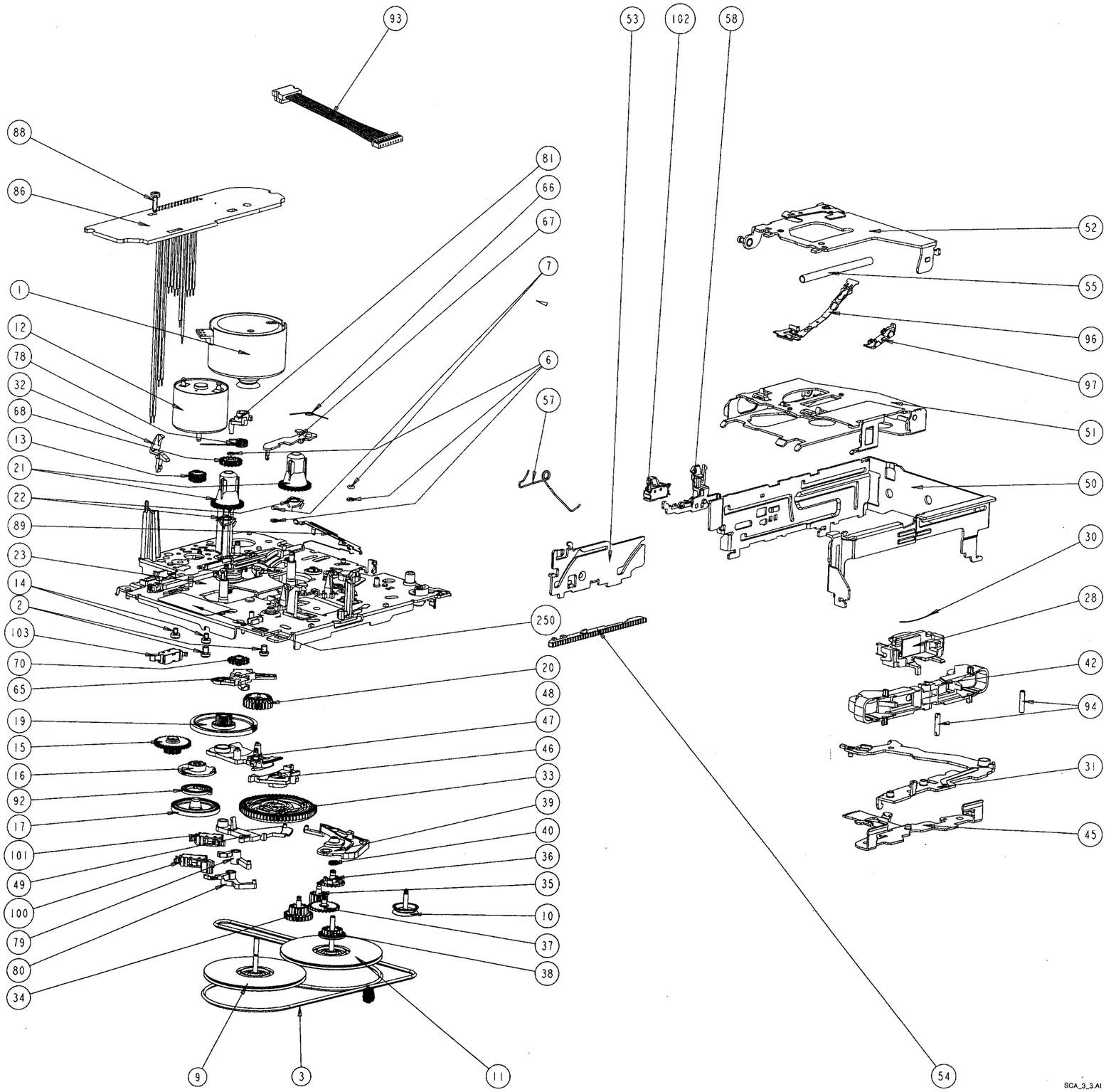
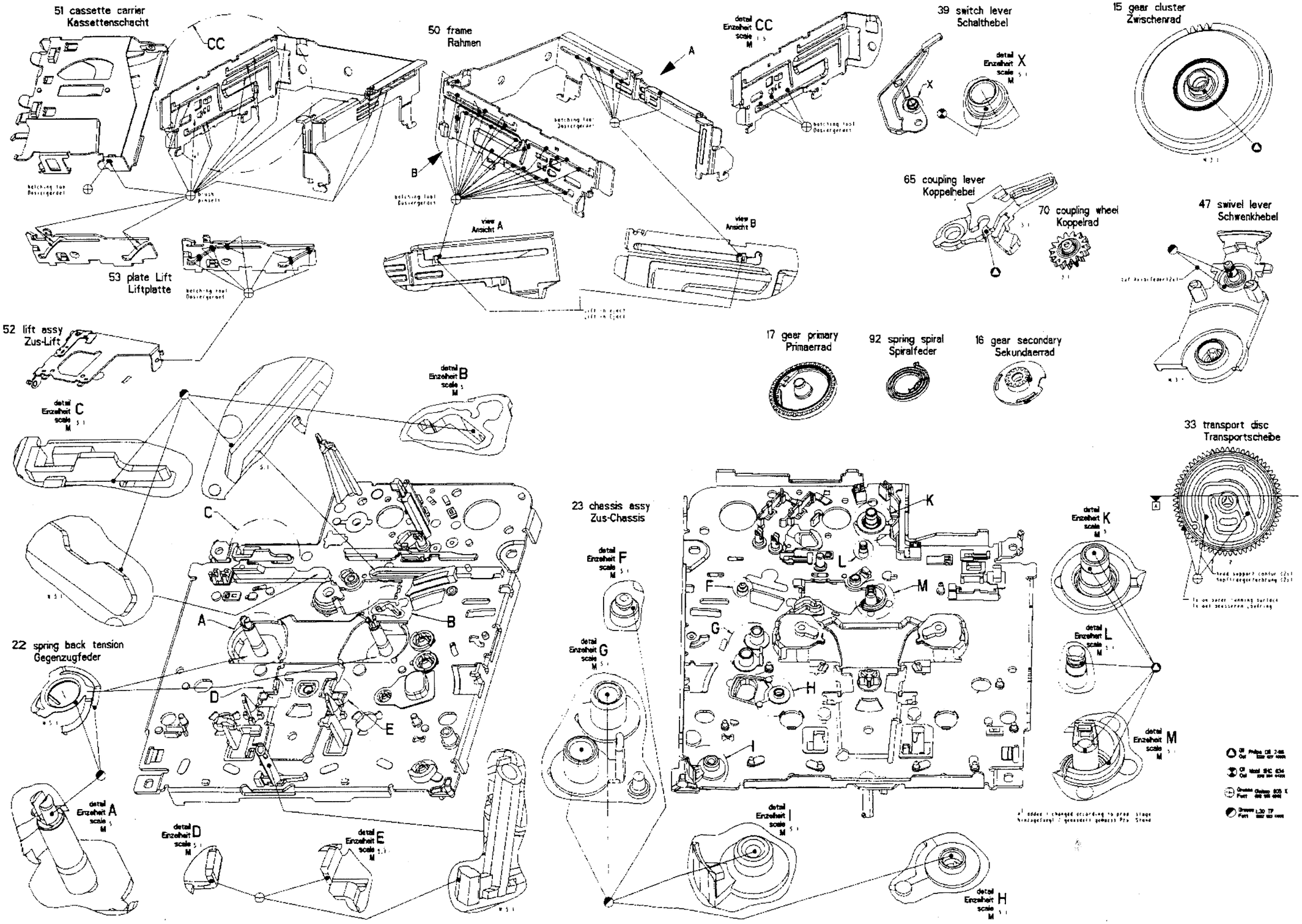


Figure iv

6. EXPLODED VIEW SCA-R3.3

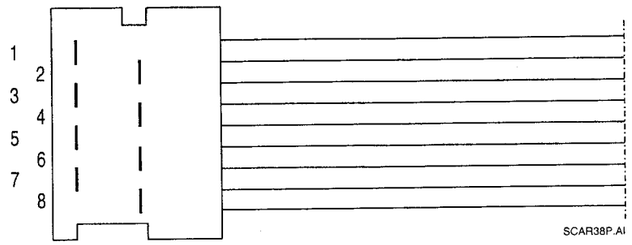


7. LUBRICATION OVERVIEW



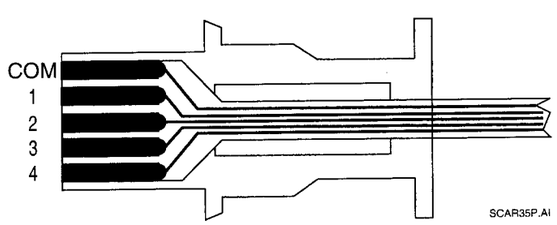
8. CONNECTIONS

8.1 SCA-R3.3 (basic version)



8 POLE CONNECTOR

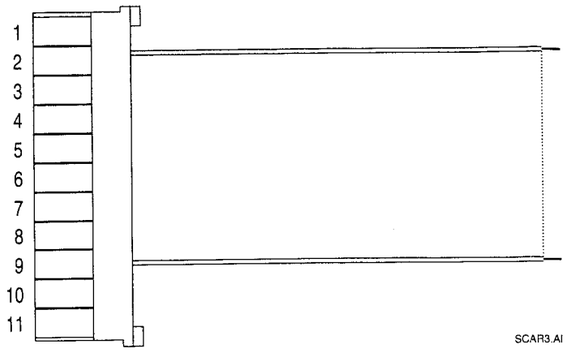
Pin	Signal
1	INSERT SWITCH
2	INSERT SWITCH - COM / GND
3	+ 12VDC
4	SERIAL CLOCK - SCL
5	SERIAL DATA - SDA
6	BUS REQUEST - CRQ
7	+ 5VDC
8	RESET



5 POLE HEAD CONNECTOR

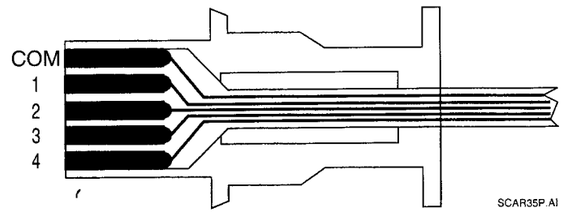
Pin	Signal
COM	COMMON
1	LEFT NOR (FORW.)
2	RIGHT NOR (FORW.)
3	RIGHT REV
4	LEFT REV

8.2 Connections SCA-R3.1



11 POLE CONNECTOR

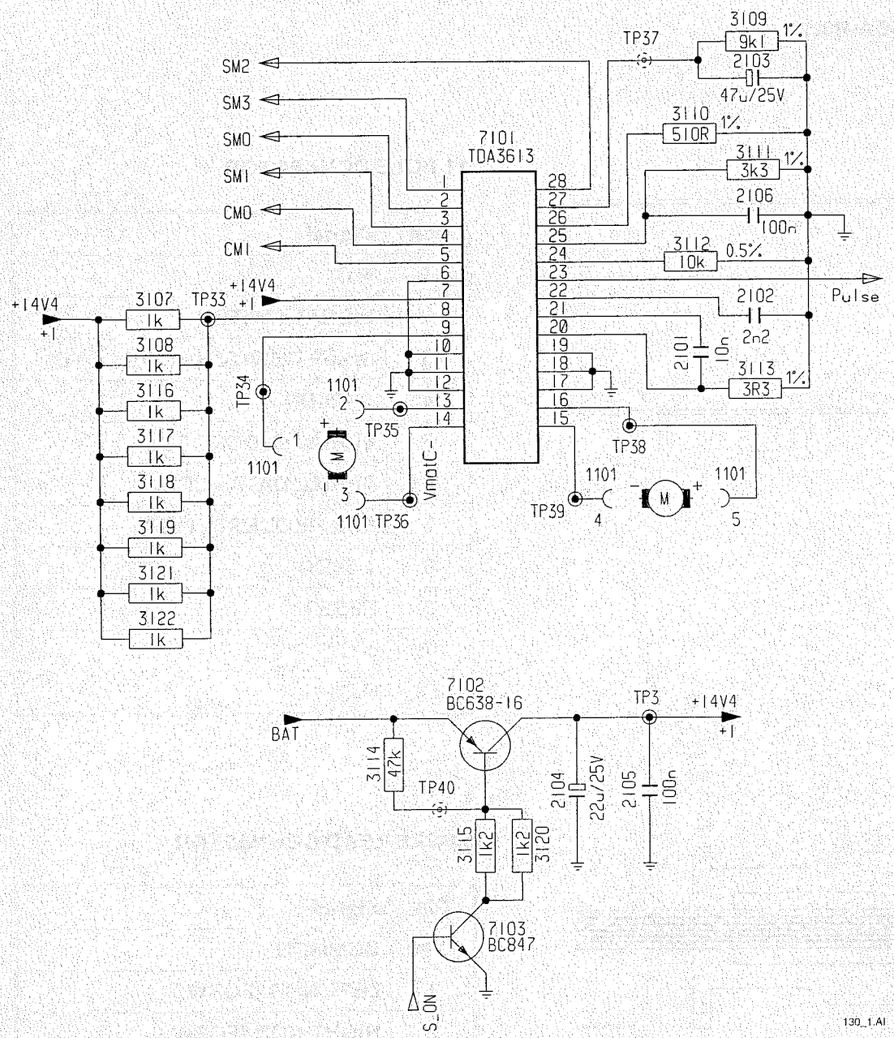
Pin	Signal
1	N.C.
2	INSERT SWITCH
3	INSERT SWITCH - COM / GND
4	+ 12VDC
5	SERIAL CLOCK - SCL
6	SERIAL DATA - SDA
7	BUS REQUEST - CRQ
8	+ 5VDC
9	RESET
10	N.C.
11	N.C.

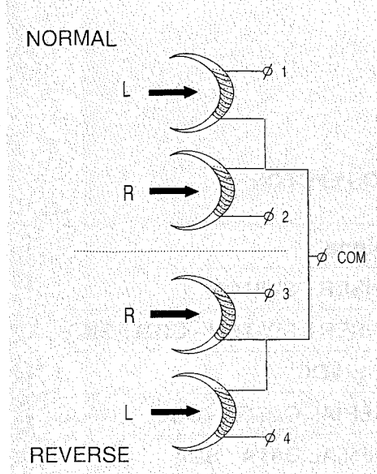


5 POLE HEAD CONNECTOR

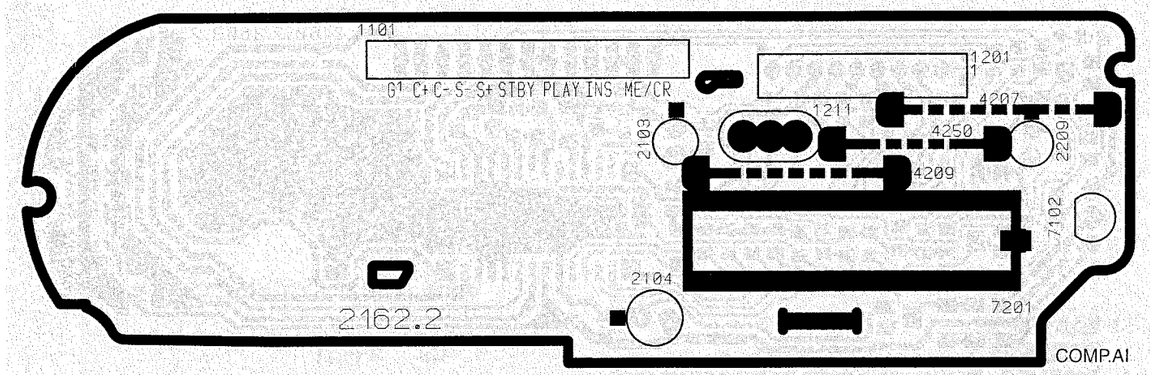
Pin	Signal
COM	COMMON
1	LEFT NOR (FORW.)
2	RIGHT NOR (FORW.)
3	RIGHT REV
4	LEFT REV

9. ELECTRICAL PART (CIRCUIT DIAGRAM 1 - HEAD CONNECTIONS - PCB LAYOUT)





HEAD
CONNECTIONS



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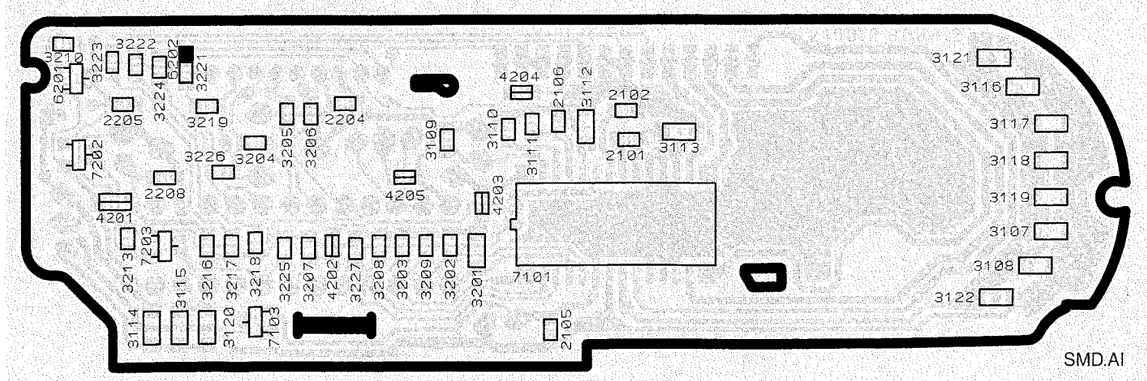
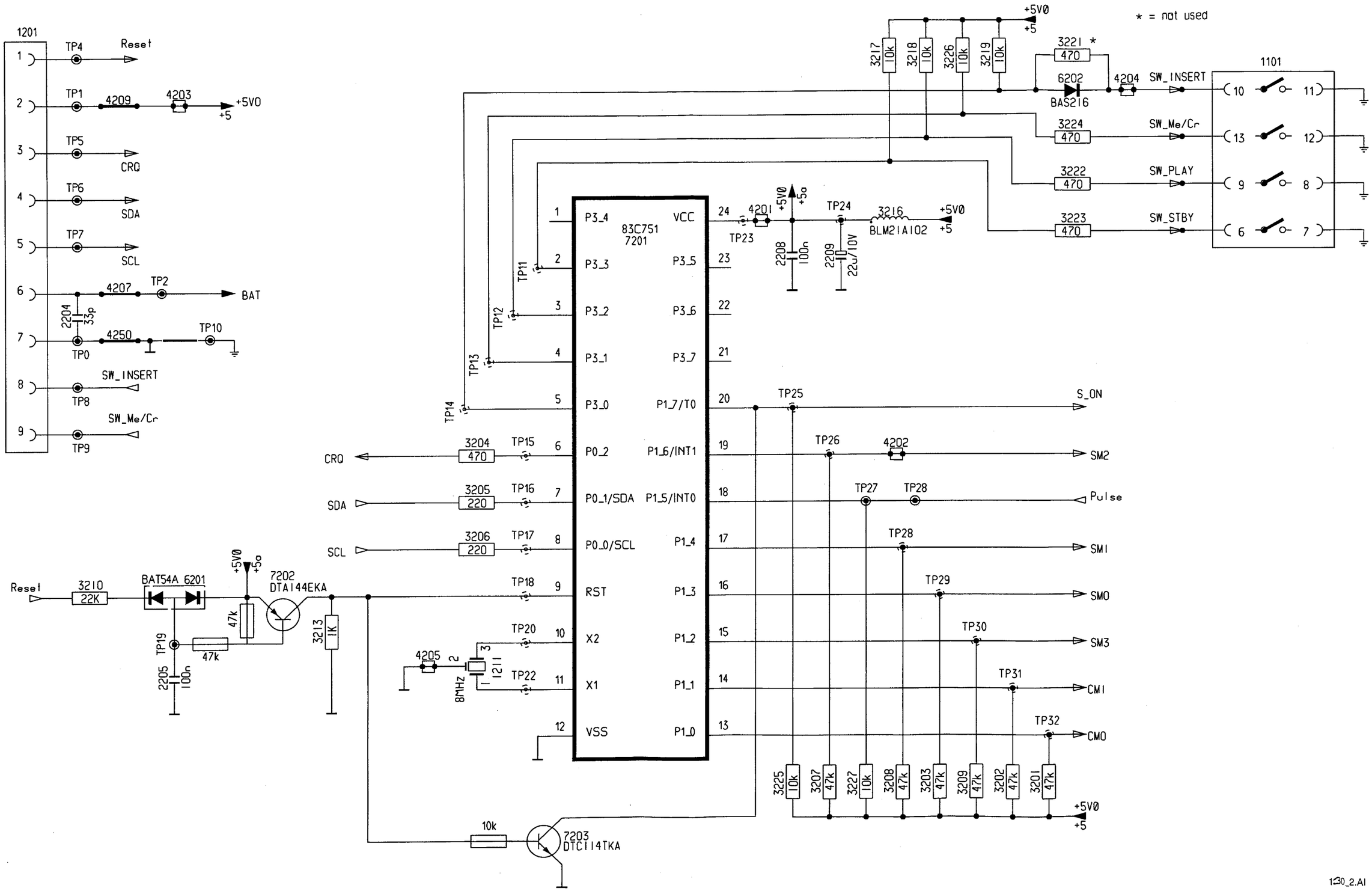


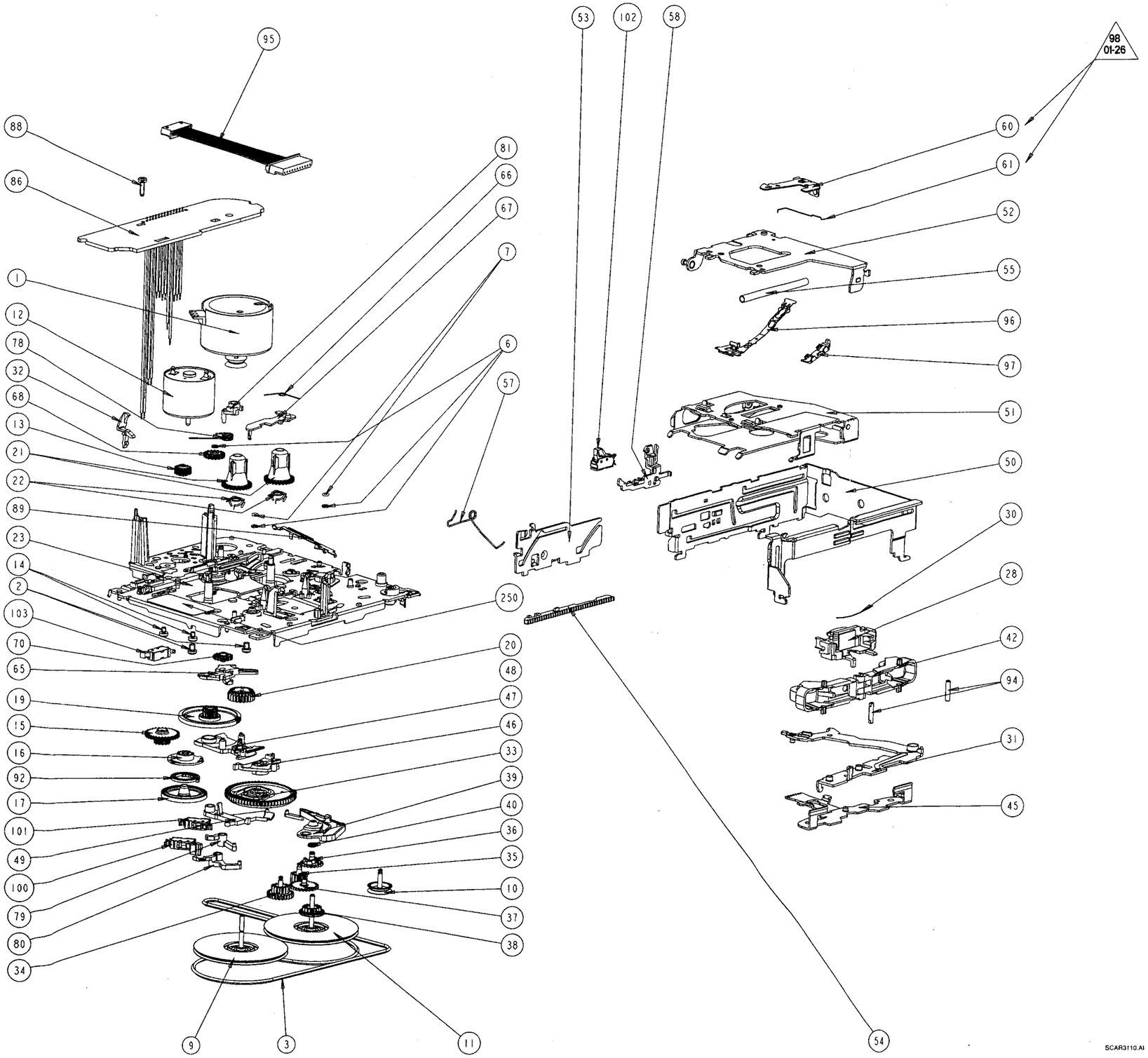
SMD.AI

9. ELECTRICAL PART (CIRCUIT DIAGRAM 2)



10. EXPLODED VIEW SCA-R3.1

(NOTE: for the SCA-R3.3 exploded view refer to section 6.)



SCAR3110.AI

11. PARTS LIST

11.1 SCA-R mechanical parts

2	4822 502 12548	Special screw
3	4822 358 10221	Driving belt
6	4822 532 12841	Fixation retaining ring
7	4822 532 12842	Ring oil protection
9	4822 528 11176	Flywheel reverse
10	4822 528 81144	Divertingwheel pulley
11	4822 528 11183	Flywheel assy normal (with pulley)
14	4822 502 14467	Screw torx M2x2,5
15	4822 522 10637	Gear cluster
16	4822 522 10641	Damping gears assy
19	4822 528 11177	Wheel connection
21	4822 528 11178	Take up wheel
22	4822 492 11481	Spring back tension
30	4822 492 11482	Spring head
31	4822 404 10937	Head support
32	4822 402 10863	Rocking lever
33	4822 466 11665	Transport disc
34	4822 528 11179	Wheel intermediate
35	4822 528 11181	Drive wheel
37	4822 528 11182	Switch wheel 1
39	4822 402 10829	Switch lever assy
42	4822 402 10831	Pinchroller brkt assy
45	4822 402 10819	Lever simpson
46	4822 402 10821	Anchor lever
47	4822 432 11304	Swivel lever assy
49	4822 402 10822	Lever switching
50	4822 691 10627	Loading assy
54	4822 522 10638	Gear rod
58	4822 401 11716	Pcb fixation
65	4822 402 10832	Coupling lever assy
66	4822 492 11484	Spring coupling
67	4822 402 10824	Slider coupling
68	4822 522 10639	Lift wheel
78	4822 492 11485	Spring switch loading
79	4822 402 10826	Switch lever Standby
80	4822 402 10827	Switch lever Play
81	4822 402 10828	Switch lever Loading
88	4822 502 21488	ScrewM2x7 Ni tapt.
89	4822 460 11098	Blocking disc transp.

11.2 SCA-R electrical parts

1	4822 361 11009	Capstan motor assy
12	4822 361 11011	Servo motor assy
28	4822 249 10542	Magnetic head w/flexfoil
86	4822 214 12502	Pcb assy SCA R3.1
93	4822 320 12057	Cable assy SCA R3.3
95	4822 320 12144	Cable assy SCA R3.1
100	4822 276 13913	Switch Play
101	4822 276 13914	Switch Standby
102	4822 276 13915	Switch Insert
103	4822 276 13916	Switch CR/ME
105	4822 214 12503	PCB assy SCA R3.3

Philips Car Systems

automotive mannesmann VDO

Supplement

Car Cassette Deck SCA-R/3.3/3.1

Service Manual

12 V

1. GENERAL

This supplement must be used together with the SCA-R3 service manual 4822 725 25481.
Because of changes and modifications in the meantime, the following parts have been revised and re-written:

- Technical data
- Maintenance
- Check & alignment procedure
- Dis- / Re-assembly procedure

Besides, a detailed 'Functional Description' has been added now. To clarify the descriptions, photographs and drawings are added where necessary.

2. TECHNICAL DATA

Operating voltages	:	10.0 - 16VDC (V1) (13.2VDC nom.) 4.75 - 5.25VDC (V2) (5VDC nom.)
Tape speed	:	4.76 cm/s ± 3%
Number of tracks	:	2 x 2
Wow and Flutter	:	≤ 0.5% (DIN w.)
S/N ratio	:	≥ 46dB (preampl.)
Crosstalk suppression (track 2-3)	:	≥ 50dB
Channel separation (track 1-2/3-4)	:	≥ 40dB
Fast winding time	:	≤ 100s (C-60)
Bus interface	:	I^2C
Weight (only mechanism)	:	400 g

PCS 92 224

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3. DETAILED FUNCTIONAL DESCRIPTION

3.1 Function / Switch Status Overview

Position	Standby Switch	Play Switch	Insert Switch
Eject	Open	Closed	Closed
Standby	Open	Open	Open
Wind	Closed	Open	Open
Play	Closed	Closed	Open

3.2 Eject Position

The transport disc (pos. 33) must be in the position, shown in fig. **1**.
NEVER turn the transport disc, unless it is not in the 'Eject' position (yet)! If not in 'Eject' position, turn the NOR fly-wheel pos. 11 counter-clockwise until the transport disc reaches the 'Eject' position.
After this position has been reached, don't turn it anymore!

3.3 Insert Function

When a cassette is inserted, the 'Insert' switch is opened; the servo motor is turning clockwise so that the cassette lift moves backward until the 'Play' switch is opened.
At that moment, the servo motor stops and the deck is in 'Standby' position. Refer to fig. **2**, especially to the 'Standby' switch position.

3.4 Standby-to-Play Function

The capstan motor turns in clockwise direction until the deck reaches the "Wind" position (FF / REW - fig. **3/4**) and the standby switch closes. At the same time the coupling assy (pos. 65 and 70) and gear rod pos. 54 are uncoupled from the servo motor and swivel lever pos. 47 is released now.
The servo motor pos. 12 turns the swivel lever until it grasps into take-up wheel gear pos. 21.
The rotation direction of the servo motor, together with the movement direction of the swivel lever, determines the play direction of the deck (NOR or REV).
The capstan motor turns clockwise until the transport disc reaches the "Play" position (Nor / Rev - fig. **5/6**). Now both the standby – and play switches are closed.
The servo motor starts to turn and tightens the tape.
Thereafter, the capstan motor starts to turn counter-clockwise for tape transport and uncouples the transport disc; simultaneously the servo motor now winds the tape (play function).

3.5 Tape End Detection

When the tape reaches the end when playing, this is detected by means of servo motor pulses. The microprocessor gives the command to the servo motor to change its rotation direction.

3.6 Play-to-Standby Function

The capstan motor now starts turning clockwise so that the transport disc assy is coupled again; the transport disc turns until both the standby- and play switches are open (refer to fig. **2**).
During the transport disc rotation, the coupling assy (pos. 65 and 70) and gear rod pos. 54 are coupled again to the servo motor and the swivel lever is disabled from the take-up wheel.

3.7 Standby-to-Eject Function

The capstan motor turns until the transport disc is in the right position to couple the loading assy. The servo motor starts turning so that the loading assy moves forward until the insertion switch is closed. At that moment the deck reaches the "eject" position and the cassette is ejected.

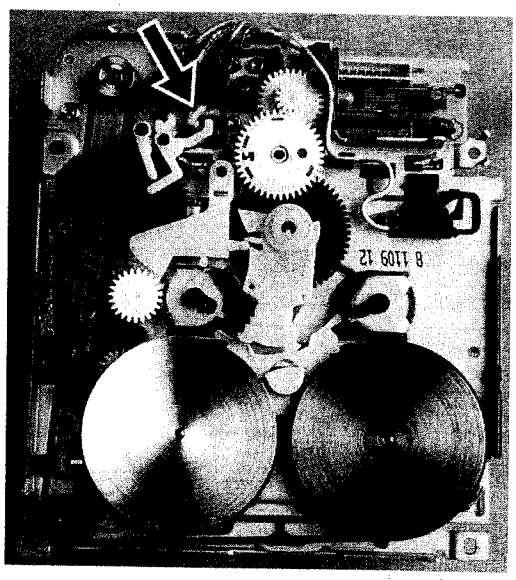

Figure 1

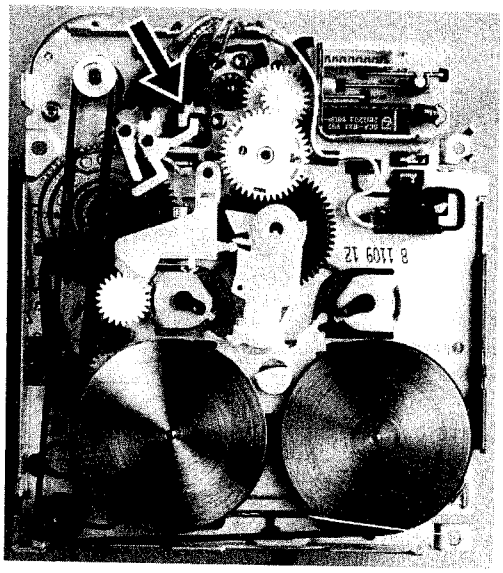

Figure 2

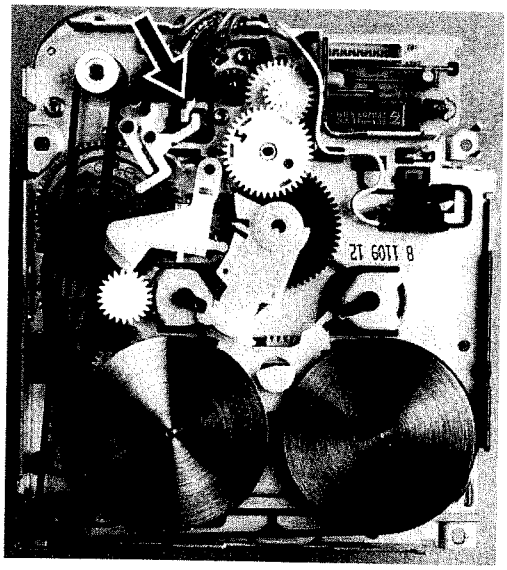

Figure 3

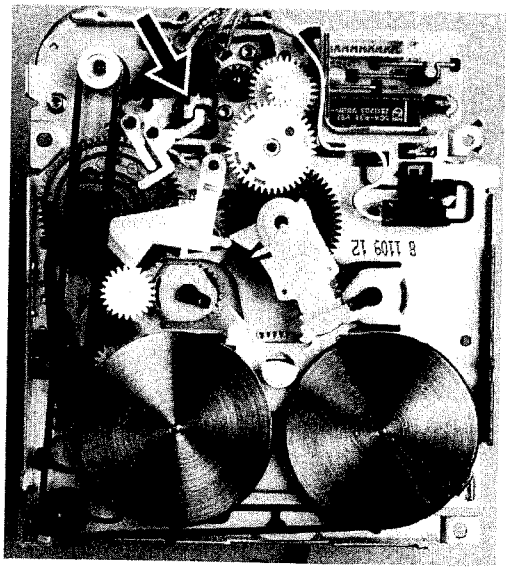

Figure 4

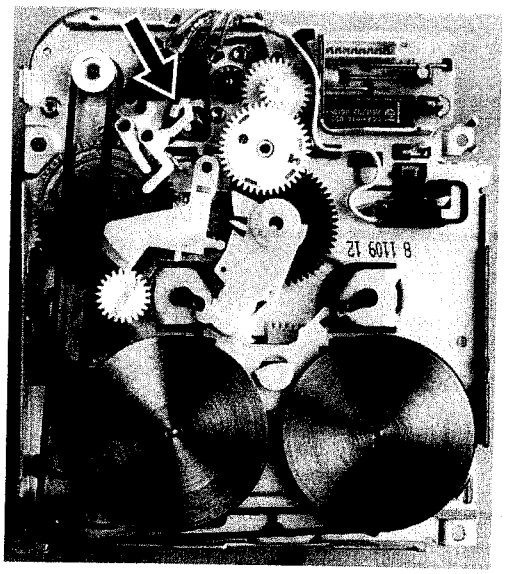

Figure 5

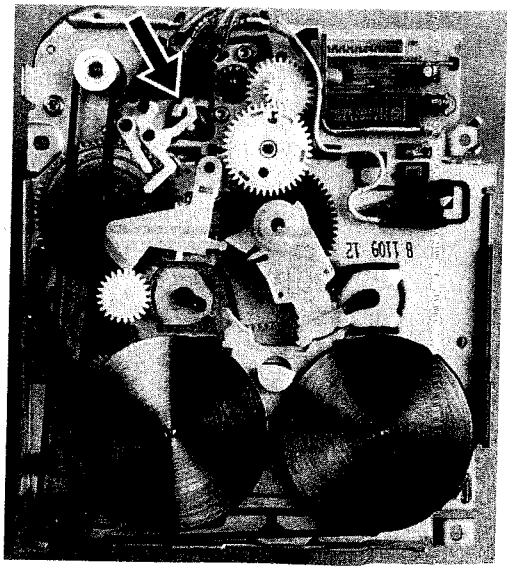

Figure 6

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SCA-R

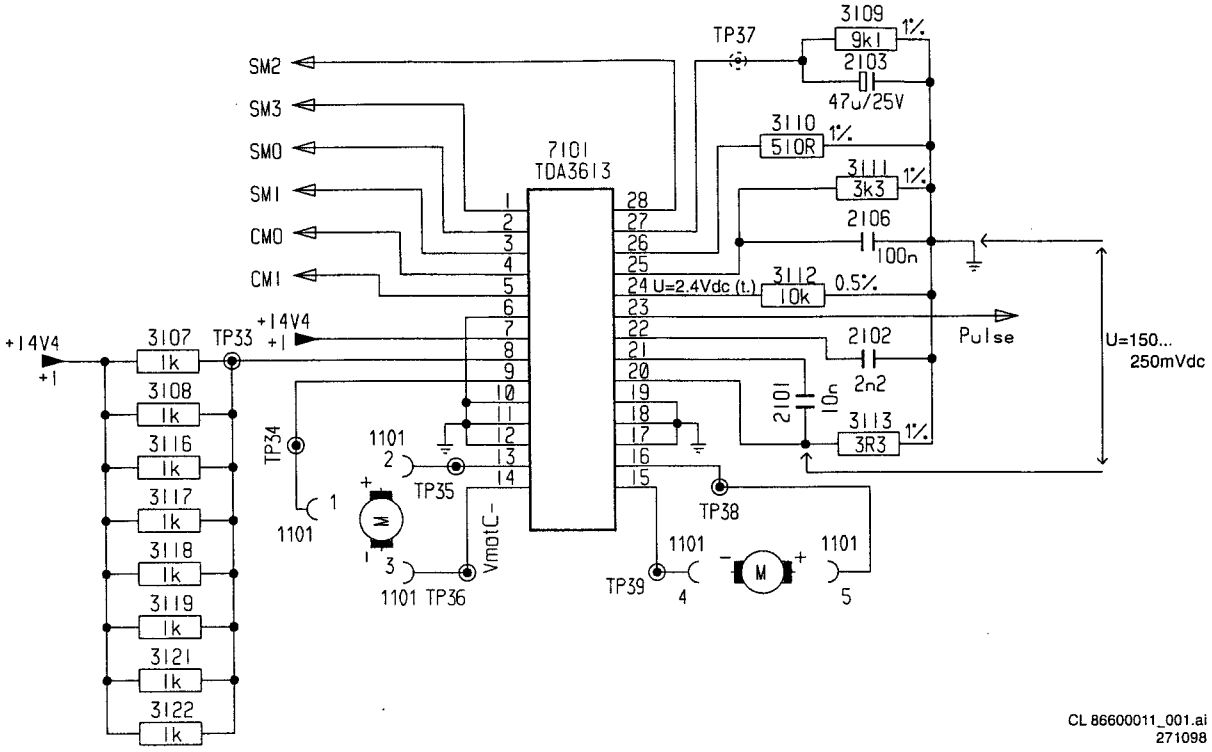

Figure 7

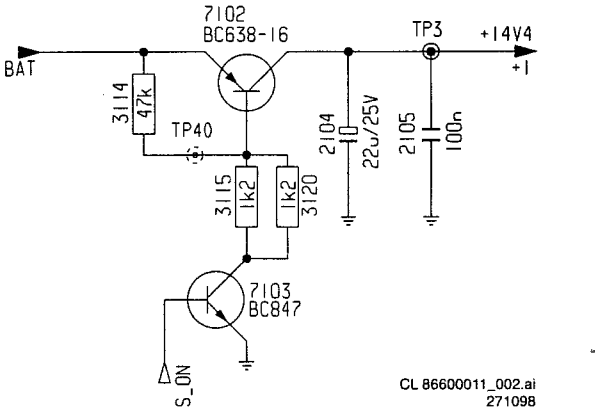

Figure 8

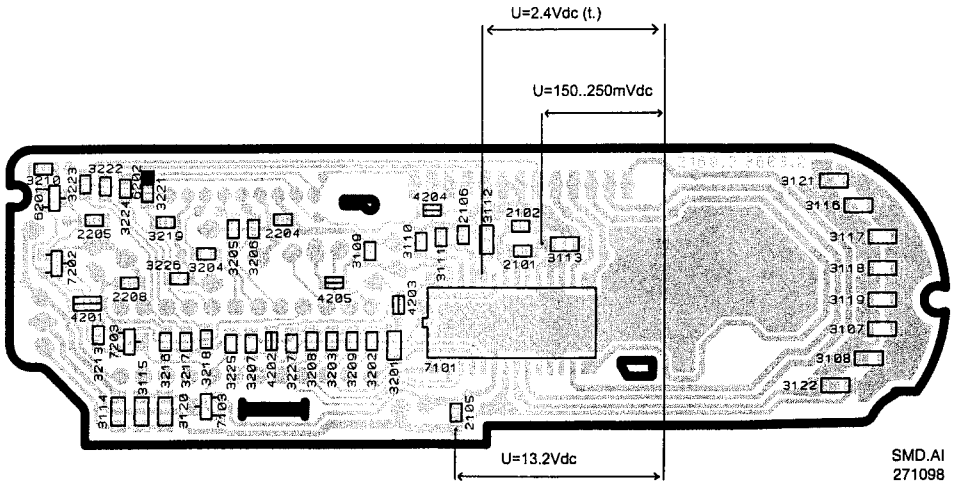

Figure 9

4. MAINTENANCE

The tape deck mechanism requires periodic cleaning.

4.1 Cleaning cassette

Use drop-in cleaning cassette SBC114 (4822 389 20035)

4.2 Cleaning with alcohol or spirit

- Cleaning with alcohol or spirit is also possible.
- Especially the following parts need cleaning:
  - Playback head pos. 28 including tape guides.
  - Capstans pos. 9/11 and pressure roller assy pos. 42.

5. CHECKS AND ADJUSTMENTS

5.1 Equipment

Equipment required:

- Universal test cassette SBC419 - 4822 397 30069
- Universal test cassette SBC420 - 4822 397 30071
- Friction test cassette 811/CTM - 4822 395 30054
- Spring scale 50-500g - 4822 395 80028
- Jig / puller for clutch - 4822 395 60039
- Wow & Flutter meter
- AC mV meters
- Power supply unit with adjustable voltage 0 – 30VDC / ≥ 2A

5.2 Wow & Flutter

This check has to be carried out on a COMPLETE car radio set; proceed as follows:

- Connect the wow & flutter meter to the LS outputs.
- Insert test cassette SBC419 or SBC420 and play the 3,150 Hz signal.
- The wow & flutter value must be ≤ 0.5% (DIN weighted – overall life cycle).

5.3 Tape speed drift / Speed adjust

- The tape speed must be 4.76 cm/s ± 3% (overall life cycle).
- The tape speed can be adjusted with the screw of the capstan motor.
- This screw can be reached via the hole in pcb pos. 86 (see figure **10**).
- Use a screw driver of 1.8mm with an insulated shaft.

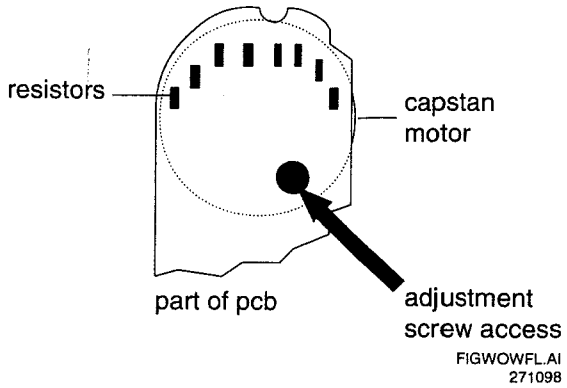

Figure 10

5.4 Play Torque

- Insert friction test cassette 811/CTM (NOR and REV).
- Play mode take-up torque must be 3.5 - 7.5 mNm.

5.5 Check Procedure of Electrical Operation

- ***Note:*** *refer to figures 7 – 9.*
- First check the voltage at TP3 (collector of pos. 7102). It must be equal to the normal car voltage (nom. 13.2VDC). If this value is not met, check pos. 7102 / 7103 and replace if necessary.
- Measure the voltage between GND and pin 20 of pos. 7101, as indicated in figure **9**. It must be 150 ... 250mVDC and hence I_{R3113} must have a value between approx. 45 .. 76mA.
- Visually check resistors pos. 3109, 3110 and 3112. The value resp. must be: 9k1, 510Ω and 10k.
  In case of doubts, check the value with help of an Ω-meter.
- Measure voltage at the indicated point (pos. 7101 pin 24); this must be 2.4VDC (typical value). If this value is not met, replace pos. 7101 or pcb.
- Check the servo motor by measuring its coil resistance; the value must be approx. 12Ω.
- Check the mechanical operation of the motor by applying a voltage of approx. 3VDC to it.
  Notes: + to red-marked terminal; disconnect motor from IC!

5.6 Mechanical Check

If there is no improvement of deck operation, first clean the deck as described, then check the following parts for correct functioning:

- Motors pos. 1 and 12
- Pressure rollers of pos. 42
- Belt pos. 3
- Flywheels pos. 9 and 11
- Diverting wheel (pulley) pos. 10
- All gears

In case of need to replace one or more parts, refer to the 'Dis-/Re-a ssembly Procedure' part.

6. DIS-/RE-ASSEMBLY PROCEDURE

6.1 Important

Before disassembling the tape deck, take care that the cassette holder pos. 51/52 is in the **eject** position. See figures **1** and **11**.
Handle the cassette lift assy carefully to prevent bending it.
For re-assembling, follow the procedures in reverse order. Take care that the wires, cams etc. are in the right position again after re-assembling.
For the exact position of the parts, refer to the exploded view (fig. **19**).

6.2 Standby position

Refer to figure **2**.
Take care that the cassette lift and the transport disc pos. 33 are in the right position (see '**6.1**') before to put it in the standby position!
The lift can be put in the standby position by turning gear assy pos. 16 / 17 / 92 to the right. Hold the lever on pos. 52 in such a way that the cassette holder is unblocked and can move backward completely; keep turning the gear assy until lift moves downwards.
Be careful not to bend metal parts unnecessarily and not to damage the gears, flywheels and belt!

6.3 Switches

To remove the

- PLAY switch pos.100,
- STANDBY switch pos.101,
- INSERT switch pos.102 and/or
- ME/CR switch pos.103,

carefully slide the switch(es) concerned out of the holder.

6.4 Capstan motor pos. 1

- Remove the belt pos. 3.
- Remove the screw pos. 88.
- Carefully slide out the pcb fixation pos. 58 and lift up the pcb pos. 86.
  Take care not to damage the black pcb supports!
- Unscrew the two screws pos. 2.
- Unsolder the capstan motor connections and take out the capstan motor.
- When re-assembling, take care that the cam on the chassis grasps in the spare screw hole of the motor.
  Note: Use a *new* belt when re-assembling!

6.5 Servo motor pos. 12

- Remove the screw pos. 88.
- Carefully slide out the pcb fixation pos. 58 and lift up the pcb pos. 86.
  Take care not to damage the black pcb supports!
- Unscrew the two screws pos. 14.
- Unsolder the servo motor connections and take out the servo motor.
- When re-assembling, take care that the cam on the chassis grasps in the hole of the motor.
- *Note:* Take care *not* to damage the gears!

6.6 Pressure rollers pos. 42

- Remove the holders with the pressure rollers by unclicking them from the centre pivot which is at the right side of the base plate pos. 23.

6.7 Head assy pos. 28

- Remove the pressure rollers as described in '**6.6**'.
- Remove the spring pos. 30.
- Remove the head assy from the holder of the base plate pos. 23.
- *Note:* When re-assembling, take care to put the spring pos. 30 in the right position again! See figure **13**.

6.8 Flywheel / gear assy (NOR) pos. 11

- Remove the belt pos. 3.
- Remove the oil protection ring pos. 7 from the capstan of flywheel pos. 11.
- Remove fixation retaining ring pos. 6.
- Take out the flywheel.
- *Note: when re-assembling, use a new retaining ring and belt,* and take care that the gear does not become damaged. Put the flywheel spindle into the bearing carefully and turn it slightly.
  Clean the capstan.

(continued on page 5)

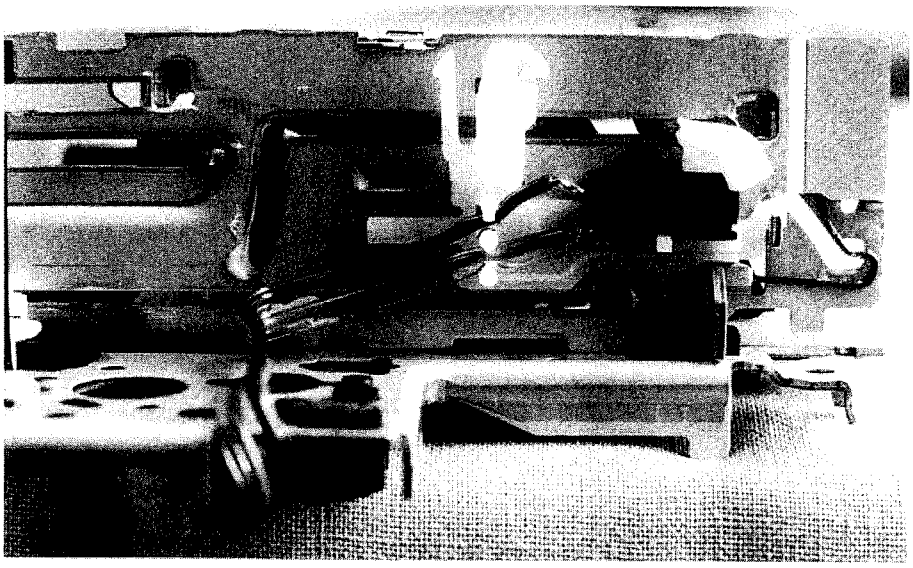

Figure 11

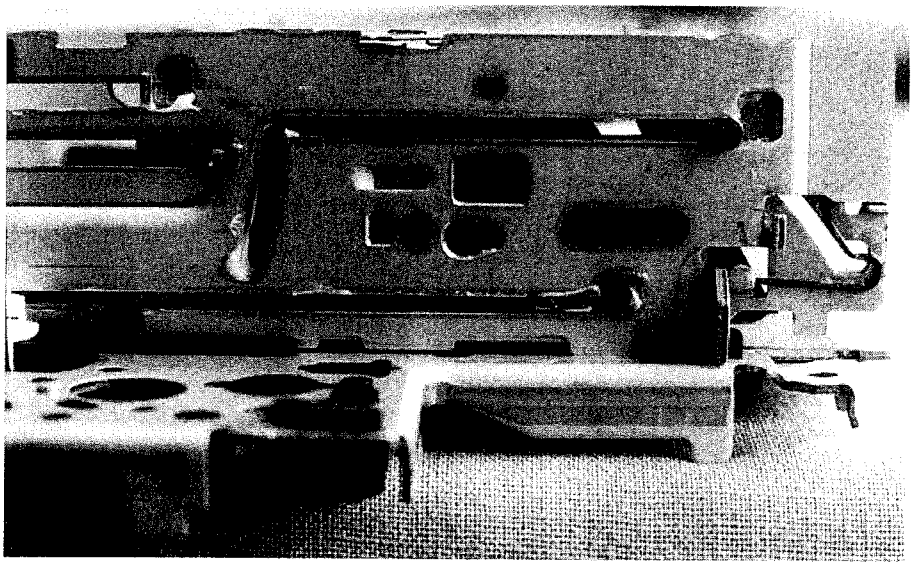

Figure 12

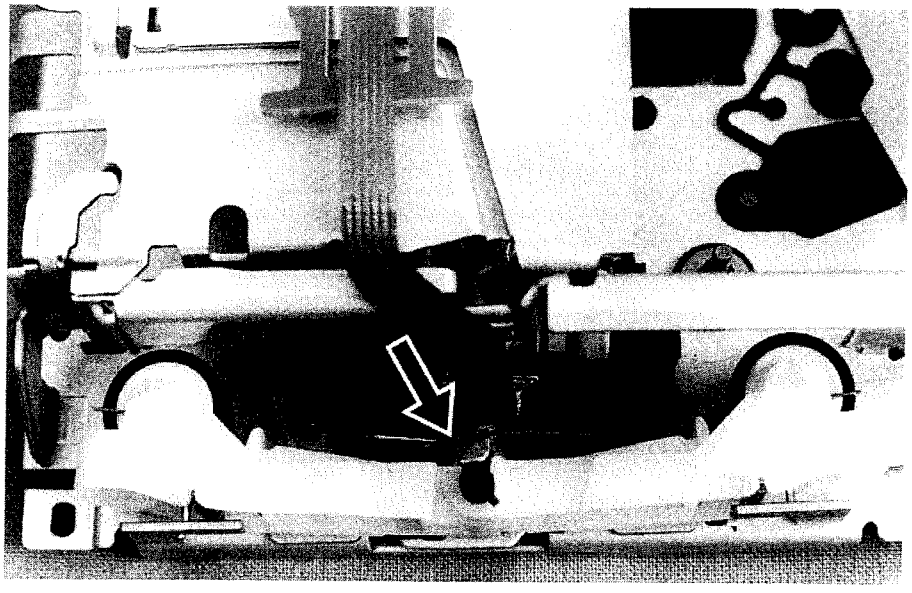

Figure 13

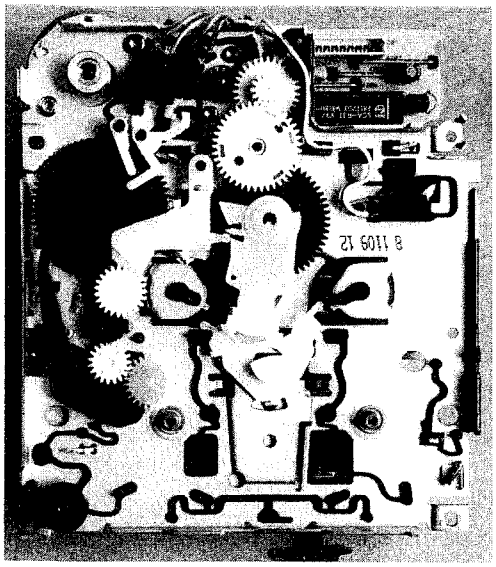

Figure 14

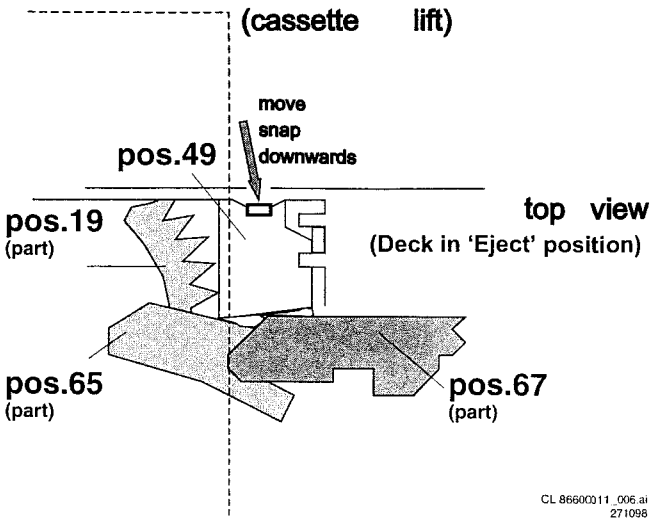

Figure 15

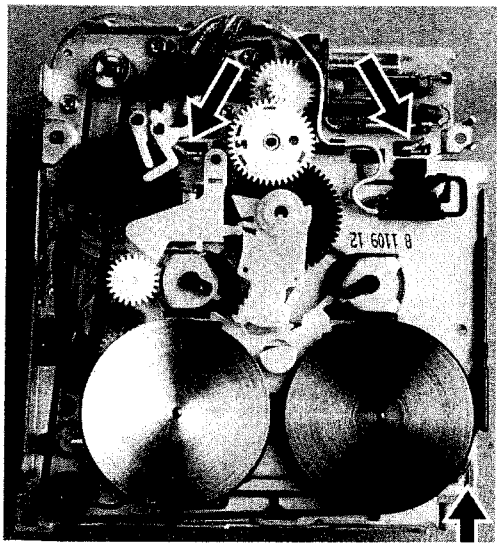

Figure 16

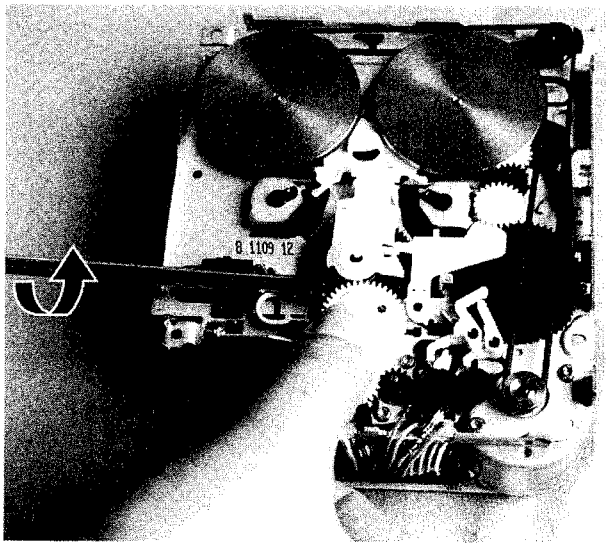

Figure 17

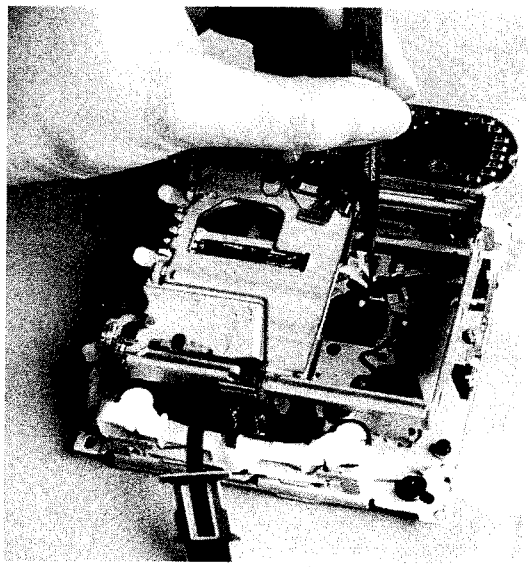

Figure 18

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6.9 Flywheel (REV) pos. 9

- *First* move the cassette holder to the **standby** position. Refer to '**6.2**' and figure **2**.
- When the cassette holder reaches the standby position, the capstan of flywheel pos. 9 can be reached.
- Remove the belt pos. 3.
- Remove the oil protection ring pos. 7 from the capstan of flywheel pos. 9.
- Remove fixation retaining ring pos. 6.
- Take out the flywheel.
- *Note: when re-assembling, use a new retaining ring and belt!*
  Clean the capstan.

6.10 Take-up wheel (NOR) / back tension spring pos. 21

- The cassette holder assy pos. 51 / 52 must be in the **eject** position.
  If the holder assy isn't yet, turn flywheel NOR pos. 11 to the left.
- When the cassette holder reaches the eject position, take-up wheel (NOR) can be reached.
- Carefully shift levers pos. 65 / 67 in backward direction until the take-up wheel becomes free.
- Take off take-up wheel by pulling it upward and holding the fixation snaps of the pivot together simultaneously.
- *Note:* When re-assembling, grease the pivot. See figure **20**.

6.11 Take-up wheel (REV) / back tension spring pos. 21

- The cassette holder assy pos. 51 / 52 must be in the **standby** position.
  Refer to '**6.2**' and figure **2**.
- When the cassette holder reaches the standby position, take-up wheel (REV) can be reached.
- Take off take-up wheel by pulling it upward and holding the fixation snaps of the pivot together simultaneously.
- *Note:* When re-assembling, grease the pivot. See figure **20**.

6.12 Replacing Special Parts

Unless replacing after damaging, the following parts may be taken out NEVER:

- Transport disc pos. 33
- Switch wheel 1 pos. 37 / Switch lever assy pos. 39
- Gear rod pos. 54 / Lift wheel gear pos. 68
- Servo drive gear cluster pos. 15
- Diverting wheel pos. 10
- Coupling lever assy pos. 65

The following sections describe the dis- / re-assembling procedure of these parts, when they need to be replaced.

6.13 Transport disc pos. 33

- Remove belt pos. 3.
- Remove switching lever pos. 49 by releasing the snap as shown in figure **15**.
- Remove play switch lever pos. 80.
- Remove standby switch lever pos. 79.
- Carefully move the arm of switch lever assy pos. 39 away from the transport disc.
- Remove intermediate wheel pos. 34.
- Cut the three snappers of the transport disc pos. 33 and take out the disc. Do not damage the post!
- When re-assembling, insert a new transport disc. Take care that the head support contour is in the 'standby' position. Also take care that the switching lever pos. 49 is in the right position again!
  See fig. **1**.
  Grease the head support contour at the right points. See figure **21**.

6.14 Switch wheel 1 pos.37 / Switch lever assy pos. 39

- Remove flywheel (NOR) pos.11 as described in '**6.8**'.
- Cut pin of switch wheel 1 pos. 37.
- Take out switch lever assy pos. 39.
- When re-assembling, insert a new switch wheel.

6.15 Gear rod pos. 54 / Lift wheel gear pos. 68

- First remove the cassette loading assy pos. 50 by bending the three lips of the assy in straight position, lifting it at the front and sliding it out carefully. See figure **16**.
- Take out gear rod pos. 54.
- Remove fixation retaining ring pos. 6.
- Take out lift wheel gear pos. 68.
- *Note: when re-assembling, use a new ring!*

(continued on page 6)

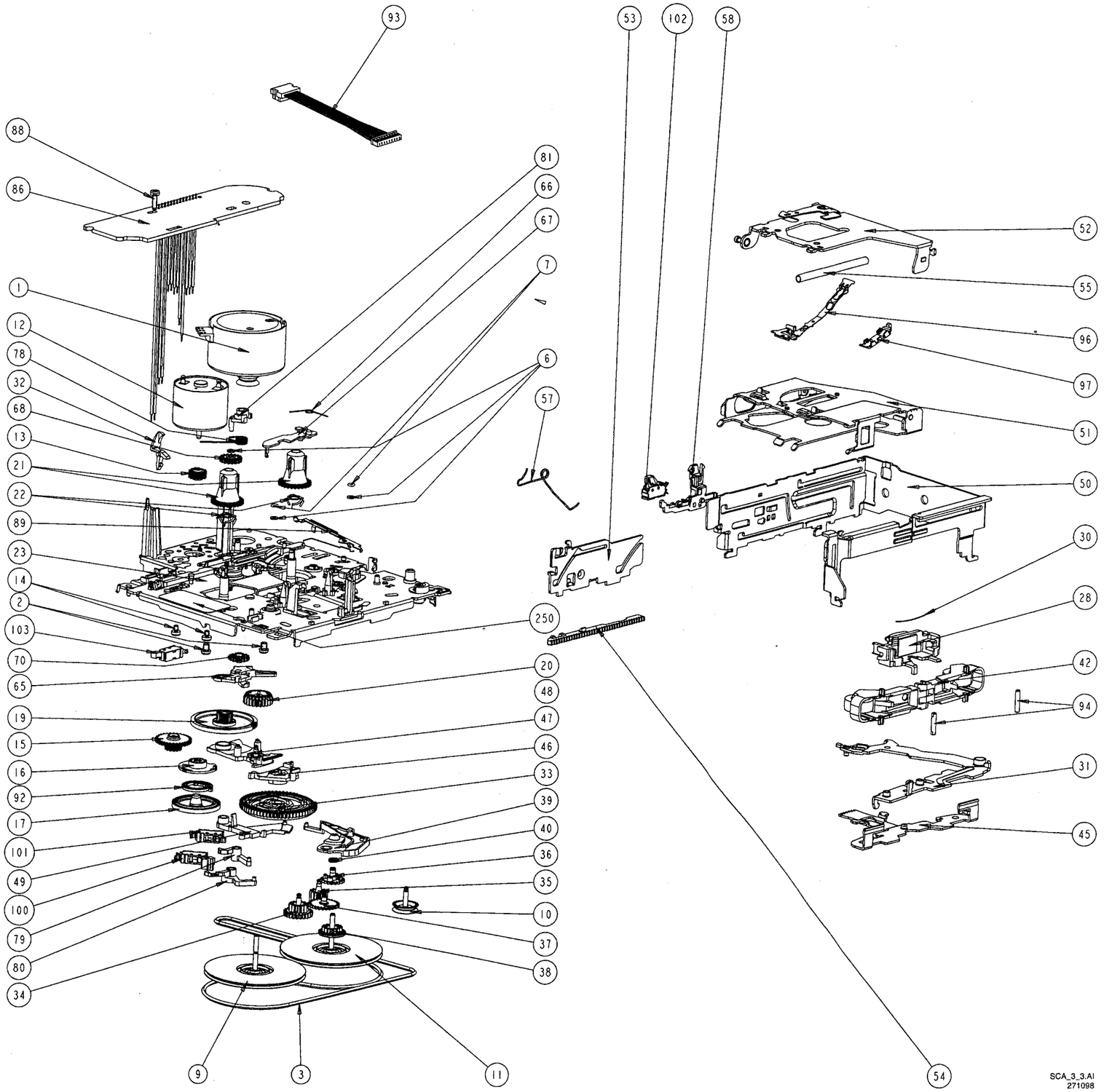

Figure 19

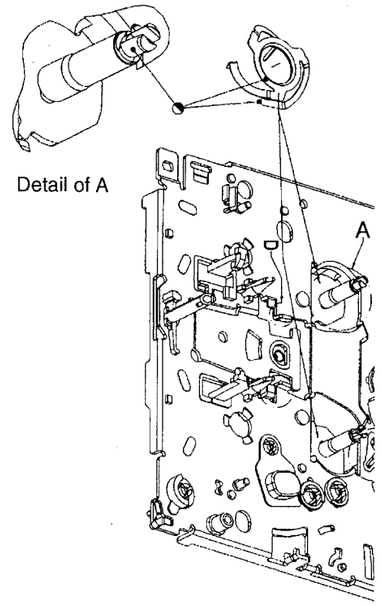

Figure 20

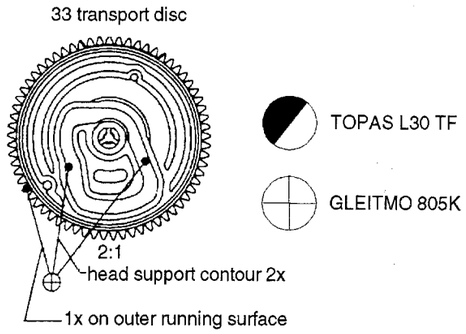

Figure 21

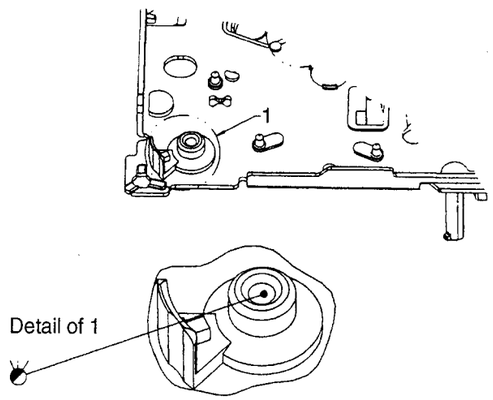

Figure 22

6.16 Servo drive gear cluster pos. 15

- *Note:* refer to figure **17**.
- Carefully lift the damping gear pos. 16 / 17 / 92 by a screwdriver as shown in the figure and remove it.
  Leave this assy complete!
- Remove switching lever pos. 49.
- Remove swivel lever assy pos. 47.
- Take out connection wheel pos. 19.
- Take out gear cluster pos. 15.
- *Important:* when re-assembling, oil the gear bearings.

6.17 Diverting wheel pos. 10

- Remove belt pos. 3.
- Remove the diverting wheel with help of special jig / puller.
- *Note:* When re-assembling, grease the wheel bearing in accordance with figure **22** and insert a *new* belt!

6.18 Coupling lever assy pos. 65

- Note: the deck must be in the **eject** position!
- Remove damping gear assy pos. 16 / 17 / 92 (see '**6.16**'). Leave this assy complete!
- Remove switch lever assy pos. 49 (see '**6.13**').
- Remove swivel lever assy pos. 47.
- Remove connection wheel assy pos. 19.
- Remove coupling spring pos. 66.
- Shift the coupling slider pos. 67 completely backward and remove it with help of a pair of tweezers.
  See figure **18**.
- Take out the coupling lever pos. 65.

6.19 Re-assembly precautions

When re-assembling the deck, take care of proper mounting of the cassette loading assy. The cam of the lift plate pos. 53 (A in figure below) must fall into the sleeve of the loading assy plate of pos. 50. See figures **11**, **12** and **23**.
The other cam B must fall into the notch of the gear rod.
The loading assy plate must match the base plate *completely*. Bend the three lips back into the right direction so that the loading assy plate is locked. See also figure **16**.

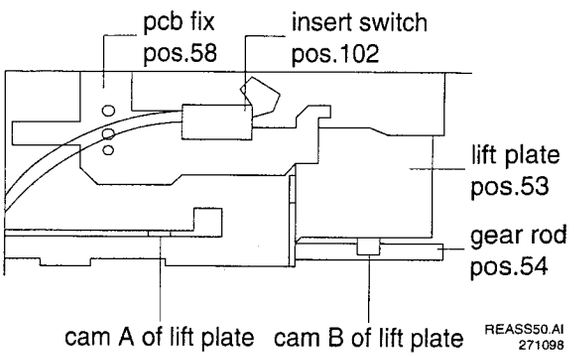

Figure 23

Always use a new belt when re-assembling it!
The belt must be mounted as indicated in the figure below.
Take care that the belt is not twisted, not touched by grease and not damaged by sharp edges of the chassis!

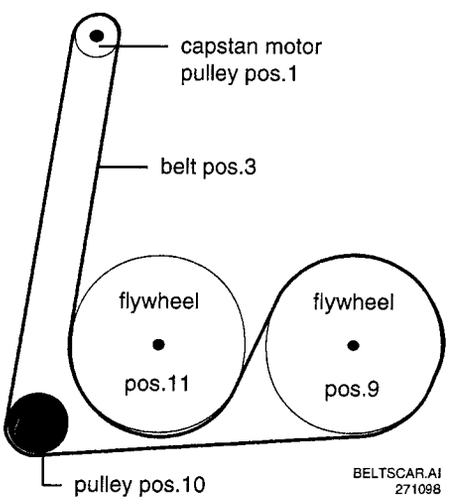

Figure 24

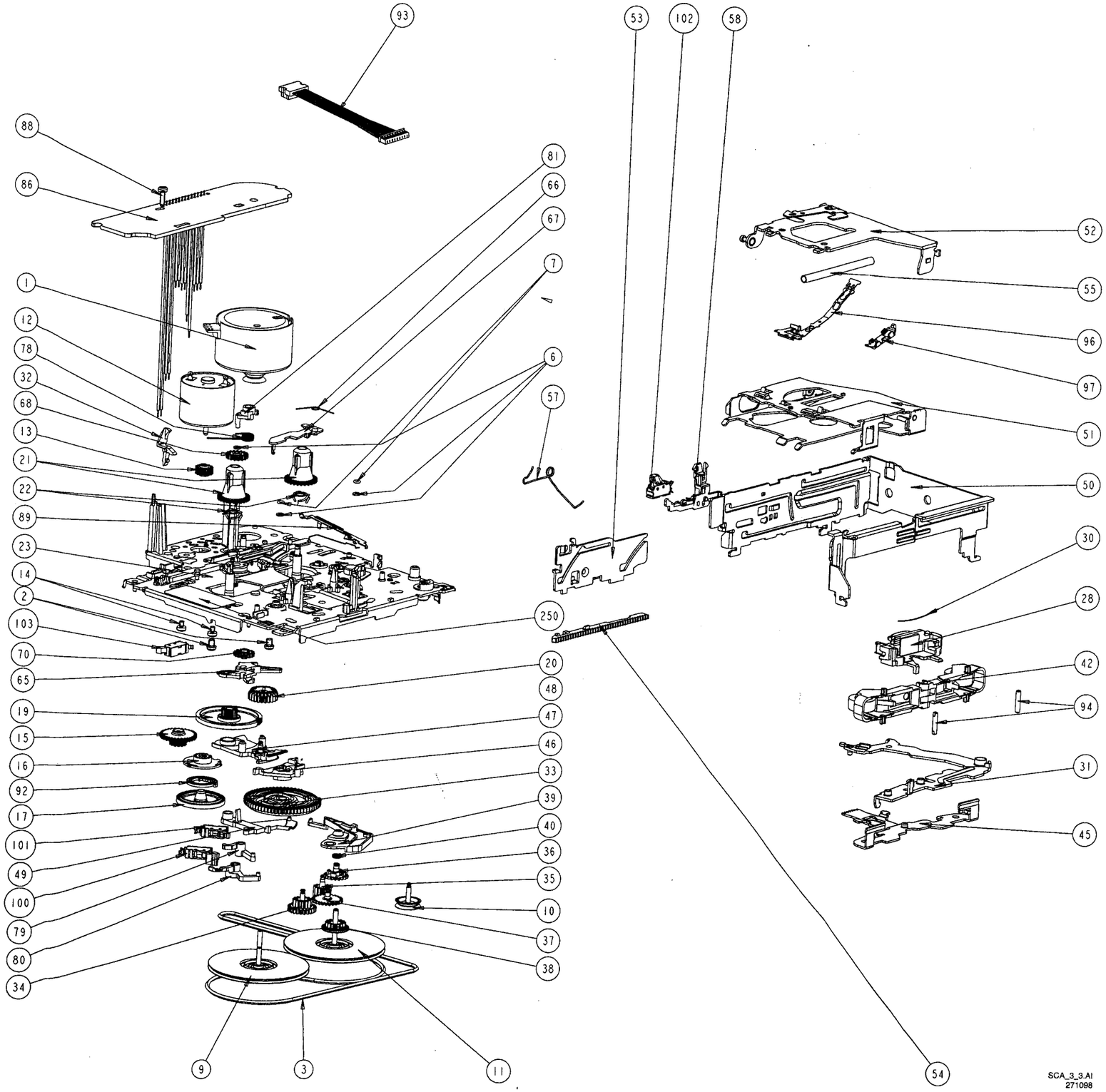

Figure 19

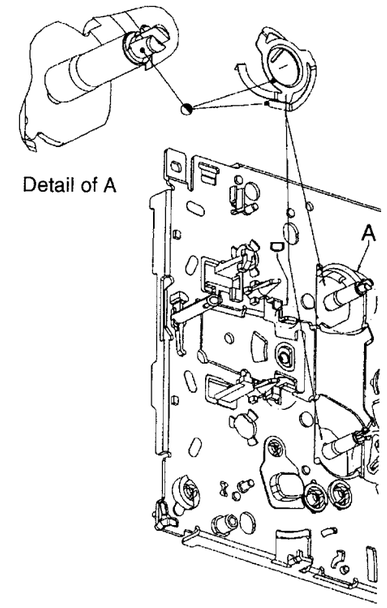

Figure 20

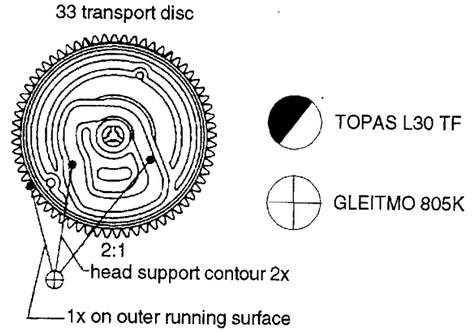

Figure 21

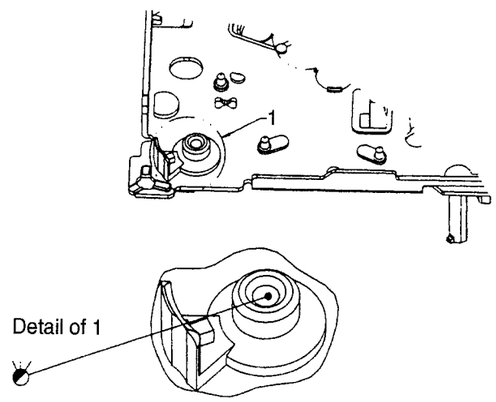

Figure 22